KENTING

KENTING EARTH SCIENCES LIMITED • 380 HUNT CLUB ROAD, OTTAWA, ONTARIO K1G 3N3

Telephone (613) 521-1630
Telex 053-4173

SOIL SURVEY

and

FEASIBILITY LEVEL LAND CLASSIFICATION OF THE LEVEE SOILS OF THE BENUE RIVER IN THE NUMAN AREA, NORTH EASTERN STATE, NIGERIA FOR SUGAR CANE PRODUCTION

July 1975

For maps, see Vol 2

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Kentering Soil Survey
Report of July 1975

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H.U. Dawson

With Compliments

Savannah Sugar Company Ltd.
P. O. Box 93,
Yola Nigeria.

PREFACE

This soil report was prepared for the Savannah Sugar Company, Yola, North Eastern State of Nigeria by Kenting Earth Sciences Limited. The primary purpose of the report is to describe, classify and map the alluvial soils of the Benue River around the Numan area, and to provide basic information necessary for the selection of the best lands for large-scale sugar cane production.

The soils were classified according to their textural profile which was represented by the textural class symbol of successive 25 cm thick horizons. Textural profiles in which the sequence and the dominance of the textural classes were similar have been classed together as textural groups. Soils map has been produced at 1:10,000 scale to indicate the approximate location and the distribution of each textural group and subgroup within the project area.

The irrigation capability of each soil unit for the sugar cane production was indicated on the 1:10,000 scale irrigation capability maps. Specific problems related to various undesirable soil characteristics for sugar cane production were also shown on 1:10,000 maps which has been produced separately.

The report presents description and data on the origins, mode of formation, capabilities and limitations of soils for irrigation. The report is divided into five parts. Part I describes the procedures, standards and definitions used to classify soils, and their irrigation capability classes for sugar cane production. Part II presents a key to the soils of the area, gives a detailed description of the physical, chemical and morphological features of the textural groups, and describes the characteristics and irrigation potential of each groups. Part III presents a grouping of soils into irrigation capability classes, and interprets the capability and limitation of soils for sugar cane production. Part IV discusses the specific problems relating to the land classification, such as heavy texture, low hydraulic conductivities, etc., which may affect the ultimate suitability of the area for a sugar cane production. Part V consists of appendices to the main text. It includes methods of analysis and also lists the standards used to classify analytical results; and the physical and chemical analysis of the collected soil samples. A small glossary is added to the appendix to explain most of the terms used in the text.

The field work of this soil survey was carried out by the Savannah Sugar Company staff under the direction of Mr. M. J. Slater. Soil samples were analysed in the Kenting Earth Sciences laboratory in Jos under the direction of Mr. H. Yuksel. Mr. P. Vroemen was responsible for the cartographic work. Soils were mapped and the report was written by Mr. H. Yuksel.

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SUMMARY

The soil survey of the alluvial soils around the Numan area for large scale sugar cane production covers some 12,797 acres. The area surveyed comprises the lands on the levee deposits of the Benue River and part of the backswamp deposits behind them. The levee deposits consist of extremely variable textures over quite short distances. This results in different drainage and irrigation requirements. In addition, sandy strata may occur at any depth of the profile with variable thickness. Bacswamp deposits have fairly uniform texture throughout the area. However, in these parts, the clay content is usually extremely high, sometimes more than 70 percent, making irrigation almost impossible because of the anticipated drainage and alkalinity problems.

The soils are classified according to texture since it is the most stable property of the alluvial soils. Irrigation land classes for sugar cane production were determined according to a series of standards modified from the U.S.D.I. Bureau of Reclamation Manual for Nigerian condition and sugar cane growth. These standards were determined jointly with the Savannah Sugar Company Limited, Yola, North East State. They are believed to have high practical value for the soils of the project area.

Of the 12,797 acres of lands surveyed, 9556 acres or 74.7 percent of lands were classified as irrigable with a variable degree of suitability for irrigated sugar cane production. Approximately 3241 acres or 25.3 percent of lands are found to be not suitable for sugar cane growth due to the extreme deficiencies in soil, topography and drainage conditions. Approximately 5011 acres of lands (39.2 percent) are classified as class 1, being highly suitable for sugar cane. All these soils are fine textured with a very high clay content which may create some drainage problems with a prolonged irrigation practices. Approximately 6.7 percent of the project area (860 acres) is moderately suitable for sugar cane, having moderate limitation such as medium textures, low available water holding capacity, and low C.E.C. Some 3078 acres of lands (24.1 percent) are suitable for irrigated sugar cane production, but approach marginality due to the extreme deficiencies in soil characteristics, such as moderately coarse texture, rapid hydraulic conductivity, and low water holding capacity. Approximately 4.7 percent of the project area (607 acres)is marginally suitable for sugar cane growth due to the coarse texture, low C.E.C. and low available moisture content. Some 3241 acres (25.3 percent) of lands are not suitable for sugar cane growth. Out of this, 1410 acres (11.0 percent) of soils have very coarse textured profiles which have very low water holding capacity and C.E.C. Permanent lakes and swamps cover some 1831 acres or 14.3 percent of the project area.

Approximately 9024 acres of lands or 79.4 percent of the project area have specific problems or anticipated problems under the prolonged irrigation. Some 6286 acres or 49.1 percent of the soils have extremely slow permeability which requires very careful management to prevent water logging and alkalinity. Although most of the area has microrelief which requires levelling, some 20 acres of lands have been mapped as depression

where the relief is up to 1 m. Approximately 583 acres of lands (4.6 percent) have a gently undulating topography with a slope up to 2 percent.

Some 1090 acres of lands (8.5 percent) have very fine texture with a clay content more than 70 percent. 1082 acres of lands (8.5 percent) have a permanently high water table due to the influence of nearby swamps and lakes.

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PART I

BACKGROUND, PROCEDURES AND DEFINITIONS

1.1. Background:

The possibility of developing the Numan area for large-scale sugar cane production was suggested by the Commonwealth Development corporation in 1968 and a Mission undertaken by CDC in 1970 reached the conclusion that the climatic and the general conditions of the area were suitable for the production of commercial yields of sugar cane. Savannah Sugar Company limited started its pilot project operation in Numan in September 1970 and its operation has been extended up to the present time. Among the main objectives of this pilot scheme were to assemble all necessary information on topography, soils and hydrology by means of soil survey and to collect available data, together with air photography.

The reconnaissance survey of the area was done by the CDC mission in 1970 and the results were presented to the government. All the necessary information relating to the extent and the location of the area, and the physiographic factors affecting soil formation, such as topography, geology and climate are referred to that report.

The detailed soil survey of the project area was carried out by Savannah Sugar Co. staff in 1974. Kenting Earth Sciences Limited was then asked to compile the collected data, to prepare soil and land capability maps and to write the soil report. The project area was visited for a short period in March 1975. Some additional samples were collected and the soil pits were examined randomly to check the accuracy of the profile descriptions made by the Soil Survey assistants, and to obtain a better idea of the conditions within the project area. The soil information collected during this visit and the previous survey, along with the analytical data from the soils laboratory provided a basis for the classification of lands for irrigation for sugar cane production and information about the limitations and recommendations for the best use of each soil in the project area.

1.2. Field Work:

Soil pit locations were established according to a 500 m x 100 m grid system on the 1:10,000 scale topographic maps. An E-W base line was established in the field and marked at every five hundred meters by the benchmarks. From each benchmark, penetration lines were extended towards N and S, being perpendicular to the base line. On each penetration line the soil pit locations were marked every 100 m. Thus one pit was the representative of 5 ha of land. Every pit was numbered as

N1, N2, N3, etc. to the North; and S1, S2, S3, etc. to the South, starting from the base line. Penetration lines were marked as B.L.1, B.L.2, etc. from west to east. In total 27 penetration lines and 738 soil pit locations were established. Soil pits were dug at each location up to 2 m depth and a detailed morphological description of each pit was made. Soil samples were collected from the locations where it was thought that there were a major morphological changes in the profile. In the more uniform areas, however, samples were collected approximately from every fourth pit.

The textural characteristics of the profile are the major factor for the classification of the soils in this study. Therefore the accuracy of the field texture has prime importance. However, the comparison of laboratory results and field determinations showed considerable differences between the two. It was desirable that additional samples should be collected from every horizon for the texture determinations in the laboratory, in addition to the detailed analysis of the selected samples. More accurate data on the textural characteristics of the project area would have been obtained. Unfortunately it was not possible to check the accuracy of the field textures descriptions made by different surveyors. Therefore there was no alternative but to accept the field texture determinations as they were.

1.3. Laboratory Work:

Soil samples brought in from the field were air dried and passed through a 2-mm sieve by the Savannah Sugar Company Limited. They were then sent to Kenting Earth Sciences Laboratory in Jos. Each sample was registered and given a laboratory number. The samples collected from each horizon of the selected soil pits were analysed to determine the following characteristics: texture, moisture equivalent, field capacity, wilting point, saturation percentage, hydraulic conductivity, electrical conductivity, pH in water and in KCl; exchangeable cations (calcium, magnesium, sodium and potassium); total exchangeable bases; cation exchange capacity; and derived values, such as percent base saturations; sodium absorption ratio (S.A.R.); and exchangeable sodium percentage (E.S.P.). The methods of analysis used and the standards to classify analytical results are given in Appendix I.

1.4. Soil Mapping:

Specific problems existed in the project area concerning accurate and rapid presentation of the soil information in a relatively short time. First, the textural composition of the alluvial deposits of the levees is extremely variable, ranging from sand to clay in a very short distance. In addition to the marked variations in the textural composition, a sandy stratum occurs in many areas in variable depth and thickness, and in some areas this stratum may reach to the surface. The definition of series and the classification of soils in alluvium is extremely difficult, as these soils are young and immature soils, and do not have genetically related horizons as residual soils have. Above all, the lack of topographic relief throughout the project area made it difficult to recognize and to delineate the different soil groups on the aerial photographs.

Most of these problems were overcome by grouping the profiles in which the sequence and the dominance of the textural characteristics were similar. Emphasis was placed on the "textural classification" of soils rather than establishing soil series. This type of textural mapping is believed to be the only solution of the problems of textural complexity and flatness of the project area.

As the laboratory results were obtained fixed observations were correlated with the analytical data. Then the textural profile formula for each soil pit was determined according to the criteria explained in section 1.5. This information was then transferred onto 1:10,000 scale aerial photographs. Detailed photo-interpretation was carried out, delineating different textural groups and subgroups. These soil boundaries and symbols were then transferred onto 1:10,000 scale photo mosaics. Overlays for each photomosaic were prepared. Capability classification of each mapping unit were determined according to the criteria given in section 1.6. This information was further used to prepare capability map of the project soils for sugar cane production. Specific problems relating to the capabilities of lands for sugar cane productions, such as soils with high amount of clay, or high E.S.P; or soils with extremely low hydraulic conductivities, were shown on a separate map as "problem areas".

1.5. Soil Classification:

The object of a soil survey is to classify and map the soil units that are found in a defined area. The basic units in the field classification system are the soil series. A soil series consists of soils that are developed on a similar parent material and under essentially similar climate and environmental conditions, particularly drainage. Any significant variation in one or more soil forming factors results in a different arrangements or formations of soil profiles; thus the soil is classified as a different series. Individual soil series may occupy large, continuous land areas, but more commonly are associated with other series in a complex landscape pattern. In some cases this is a result of local differences in relief and drainage, while in other it is due to the close association of different parent materials.

Definition of soil series of alluvial soils presents many problems as they do not have sequences of genetically related horizons. Since they are young, immature soils, it is difficult to select morpho-genetic criteria on which to base soil series. Materials laid down by water have layers that differ greatly in some characteristics, such as texture, but the occurrence of these layers are rather accidental and governed by geological process and they do not bear any genetic relation to each other. If every difference of such layers were used as a basis for separating series, an almost infinite number of series could be recognized among alluvial soils. This would eliminate the purpose of the soil series.

As a rule, the separation of soil series in alluvial soils are based on the texture since it is the most stable property of these soils. In this study, soil texture was used as a basis for soil classification. The criteria used here was adopted from D.A. Holmes and S. Western (2).

1.5.1. The Classification of Texture:

The soil particle diameters used to define sand, silt and clay fractions and texture classes are those of the U.S.D.A. Handbook No. 18, Soil Survey Manual (3). The texture range is divided into four "textural units" as follows:

1. Coarse texture (L) - All grades of sand and loamy sand.
2. Coarse-Medium texture (M) - Sandy loam, fine sandy loam, very fine sandy loam, light loam, light silt loam.
3. Fine-Medium texture (H) - Heavy loam, heavy silt loam, silt clay loam, clay loam.
4. Fine texture (V) - sandy clay, silt clay, clay, heavy clay.

These textural units are defined quantitatively in Figure 1.

The significant factor in the separation of medium textures into coarse-medium (M) and fine-medium (H) is the clay content. The definitive clay content is taken at 20 percent, thus separating U.S.D.A. loams and silt loams into light and heavy classes. This is believed to give better understanding of the type of the deposition since the clay content of the sediments and the size of the silt and sand fraction is closely related to the movement of the river.

1.5.2. Textural Profile Formula:

The upper soil textural profile (0-150 cm) was annotated by a six symbol formula, each symbol representing the textural class of successive 25 cm thick layers. Two or more adjacent 25 cm layers of the same textural coding were denoted by a numeric frequency symbol (Figure 2). In horizons where textural strata did not correspond to the 25 cm intervals, layers of 15 cm thickness were denoted by a capital letter, layers of 10 cm thickness were denoted by a lower case letter. Layers of 5 cm or less were ignored. During the initial field work done by Savannah Sugar Co. Staff, all depths were given in inches. They were converted to centimetres before the actual soil classification.

1.5.3. Textural Groups:

Textural profiles in which the sequence and dominance of textural units were similar have been classed together. These classes were called textural groups and were based on two combined units of the four basic textural units, i.e. L, M, H and V:

1. Coarse and coarse-medium textures (LM)
2. Fine and fine-very fine textures (HV)

This combination reduced the mapping complexity as far as possible. The relationship of these combined units, LM and HV, within the textural profile, was the diagnostic factor in textural group classification.

Generally, the profile forms a simple sequence in which the relationship is straightforward. The following basic textural groups and subgroups have been recognized in the project area.

1.5.3.1. <u>Group A:</u> This group consists of almost entirely of LM textures (Figure 3)

e.g. M^6, ML^3M^2, $L^2 \frac{M}{l} M^2L$, L^6

The following subgroups are separated according to the dominance of the L or M textures:

A1 - This subgroup consists of textural profile in which L and M textures occupy approximately the same proportion of the upper soil depth ranges, e.g.

e.g. L^3M^3, M^3L^3, M^2L^2ML

Textural profile symbol: A

A2 - This subgroup consists of textural profiles which almost entirely consist of L textures, e.g.

e.g. L^6, $L^5 \frac{L}{m}$

Textural profile symbol: AL

A3 - This subgroup consists of textural profiles which almost entirely consists of M textures, e.g.

e.g. M^6, $M^5 \frac{M}{l}$

A4 - This subgroup consists of textural profiles in which L textures occupy 4 horizons or more, e.g.

e.g. L^4M^2, ML^5, L^2ML^2, $L^3M \frac{L}{m}$

Textural profile symbol: A LM

A5 - This subgroup consists of textural profiles in which M textures occupy 4 horizons or more, e.g.

e.g. M^4L^2, LM^4L, $L^2M \frac{L}{m}$

Textural profile symbol: AML

1.5.3.2. <u>Group B:</u> This group consists of textural profiles in which LM textures overlie HV textures (Figure 3).

e.g. M^2LH^3, $M^2L^2V^2$, $L^2M H^2 \frac{H}{v}$

The LM layers which were less than 50 cm (shallow) was shown as Bs, and the LM layers which were more than 100 cm (deep) was shown as Bd.

The following subgroups were separated according to the thickness of LM layers and the dominance of L, M, H or V textures.

B1 - This subgroup consists of textural profiles in which LM and HV textures occupy approximately the same proportion of the upper soil depth range,

$$\text{e.g. } M^3V^3,\ L^2M\,HV^2,\ M^2L\,\frac{m}{H}\,V^2$$

Textural profile symbol: B

B2 - This subgroup consists of textural profiles in which LM layers are shallow and H textures occupy the lower horizons almost entirely,

$$\text{e.g. } L\,H^5,\ M^2H^3\,\frac{H}{v},\ LM\,\frac{1}{H}\,H^3$$

Textural profile symbol: BsH

B3 - This subgroup consists of textural profiles in which LM layers are shallow and V textures almost entirely occupy the lower horizons,

$$\text{e.g. } L^2\,V^4,\ ML\,\frac{1}{V}\,V^3,\ M^2V^3\,\frac{V}{h}$$

Textural profile symbol: BsV

B4 - This subgroup consists of textural profiles in which LM layers are shallow. H textures occupy more than 2 layers and V textures occupy at least 1 layer in the lower horizon,

$$\text{e.g. } L^2\,H^3V,\ L\,\frac{L}{m}\,H^2\,\frac{H}{v}\,V,\ M^2V\,H^3$$

Textural profile symbol: BsHV

B5- This subgroup consists of textural profiles in which LM layers are shallow. V textures occupy more than 2 layers and H textures occupy at least 1 layer in the lower horizon,

$$\text{e.g. } M^2V^3H,\ ML\,V^2\,\frac{V}{h}\,H,\ L^2\,\frac{m}{V}\,V^2H$$

Textural profile symbol: BsVH

B6 - This subgroup consists of textural profiles in which L layers occupy more than 100 cm of the upper soil depth range and lower layers consist of HV textures,

$$\text{e.g. } L^4H^2,\ L^4VH,\ L^3\,\frac{L}{m}\,H^2$$

Textural profile symbol: BdL

B7 - This subgroup consists of textural profiles in which M layers occupy more than 100 cm of the upper soil depth range and lower layers consist of HV textures,

e.g. M^5V, $M^4 \frac{M}{h} H$, M^4V^2

Textural profile symbol: BdM

B8 - This subgroup consists of textural profiles in which LM layers are deep. L textures occupy more than 2 layers and M textures occupy at least 1 layer in the upper horizons,

e.g. L^3MV^2, LML^2HV, $ML^2 \frac{L}{m} H \frac{H}{v}$

Textural profile symbol: Bd LM

B9 - This subgroup consists of textural profiles in which LM layers are deep. M textures occupy more than 2 layers and L textures occupy at least 1 layer in the upper horizons,

e.g. $M^2 \frac{M}{l} L V^2$, $LM^3 \frac{m}{V} H$, $MLM^2 \frac{V}{h} H$

Textural profile symbol: BdML.

1.5.3.3. Group C: This group consists of textural profiles in which HV textures overlie LM textures (Figure 3).

e.g. H^3LM^2, $V^2 \frac{H}{v} M^3$, $H^2V^2L^2$

The HV layers which occupied less than 50 cm (shallow) were shown as Cs, and the HV layers which occupied more than 100 cm (deep) were shown as Cd.

The following subgroups were separated according to the thickness of HV layers and the dominance of L, M, H and V textures.

C1 - This subgroup consists of textural profiles in which HV and LM textures occupy approximately the same proportion of the upper soil depth range,

e.g. V^3M^3, V^2HL^3, H^3L^3

Textural profile symbol: C

C2 - This subgroup consists of textural profiles in which HV layers occupy less than 50 cm (shallow) and L textures occupy almost all the lower horizons,

e.g. HL^5, $H \frac{V}{l} L^4$, $VL^4 \frac{l}{M}$

Textural profile symbol: CsL

C3 - This subgroup consists of textural profiles in which HV layers are shallow (less than 50 cm) and M textures occupy almost the entire lower horizons,

e.g. VM^5, H^2M^4, $H \frac{h}{M} M^3 \frac{m}{L}$

Textural profile symbol: CsM

C4 – This subgroup consists of textural profiles in which HV layers are shallow. L textures occupy more than 2 layers and M textures occupy at least 1 layer in the lower horizons,

e.g. $V\,L^3M^2$, $H\,\frac{H}{v}\,LM^2L$, $H^2M\,\frac{L}{m}\,L^2$

Textural profile symbol: CsLM

C5 – This subgroup consists of textural profiles in which HV layers are less than 50 cm (shallow). M textures occupy more than 2 layers and L textures occupy at least 1 layer in the lower horizons,

e.g. $V\,M^4L$, $H\,LM^3L$, $HVLM^3$

Textural profile symbol: CsML

C6 – This subgroup consists of textural profiles in which H layers are deeper than 100 cm of the upper soil depth range and lower horizons consist of LM textures,

e.g. H^5L, H^4L^2, $H^4\,\frac{H}{v}\,M^2$

Textural profile symbol: CdH

C7 – This subgroup consists of textural profiles in which V layers are deeper than 100 cm of the upper soil depth range, and lower horizons consists of LM textures,

e.g. V^5M, V^4LM, $V^4\,\frac{V}{m}\,L$

Textural profile symbol: CdV

C8 – This subgroup consists of textural profiles in which HV layers are deeper than 100 cm. H textures occupy more than 2 layers and V textures occupy at least 1 layer of the upper horizons,

e.g. $H^3V\,L^2$, $H^3\,\frac{H}{v}\,VM$, H^2VHLM

Textural profile symbol: CdHV

C9 – This subgroup consists of textural profiles in which HV layers are deeper than 100 cm. V textures occupy more than 2 layers and H textures occupy at least 1 layer of the upper horizons,

e.g. V^3HL^2, $V^2HV\,ML$, $VHV^2\,\frac{V}{m}\,M$

Textural profile symbol: Cd VH

1.5.3.4. <u>Group D:</u> This group consists of textural profiles which are more or less wholly comprised of HV textures (Figure 3).

e.g. V^6, H^6, H^3V^3, $V^3\,\frac{V}{H}\,H^2$

The following subgroups were ... dominance of H and V textures.

D1 – This subgroup consists of textural profiles which are comprised almost entirely of V textures,

e.g. V^6, $V^5 \frac{V}{h}$, $V^5 \frac{V}{m}$

Textural profile symbol: DV

D2 – This subgroup consists of textural profiles which are comprised almost entirely of H textures,

e.g. H^6, $H^5 \frac{H}{v}$, $H^5 \frac{H}{m}$

Textural profile symbol: DH

D3 – This subgroup consists of textural profiles in which V textures occupy 4 or more horizons, and H textures occupy at least 1 horizon,

e.g. V^5H, HV^4H, HV^2HV^2

Textural profile symbol: DVH

1.5.3.5. <u>Group X:</u> This group consists of textural profiles in which LM and HV textures are interbedded to give no definite sequence (Figure 3).

e.g. $H\,M^3H^2$, $HMHM \frac{h}{L} V$, L^2HVMV

The following subgroups were separated according to the dominance of L, M, H and V textures.

X1 – This subgroup consists of textural profiles in which the LM and HV textures occupy approximately the same proportion of the upper soil depth range,

e.g. VM^3H^2, $MH^2 \frac{h}{L} L^2$, $HMVM \frac{m}{H} V$

Textural profile symbol: X

X2 – This subgroup consists of textural profiles in which L textures occupy 4 or more horizons,

e.g. HL^2VL^2, $L \frac{H}{v} V L^3$, $V L^4H$

Textural profile symbol: XL

X3 – This subgroup consists of textural profiles in which M textures occupy 4 or more horizons,

e.g. VM^3HM, M^2VMHM, $M^2 \frac{M}{v} V \frac{v}{M} M$

Textural profile symbol: XM

X4 – This subgroup consists of textural profiles in which H textures occupy 4 or more horizons, e.g. $H\,LH^2MH$, $H^2\,\frac{h}{L}\,LH^2$, $H\,\frac{h}{L}\,MH^3$

Textural profile symbol: XH

X5 – This subgroup consists of textural profiles in which V textures occupy 4 or more horizons,

e.g. $V^2\,LVMV$, $LV\,\frac{M}{v}\,V^3$, $VLVLV\,\frac{V}{h}$

Textural profile symbol: XV

X6 – This subgroup almost entirely consists of L and V textures which are interbedded to give no definite sequence. V textures occupy 4 or more horizons and L textures occupy at least 1 horizon,

e.g. V^2LV^2L, $L\,\frac{L}{v}\,V^2LV$, LV^4L

Textural profile symbol: XVL

X7 – This subgroup almost entirely consists of M and V textures which are interbedded to give no definite sequence. V textures occupy 4 or more horizons, and M textures occupy at least 1 horizon,

e.g. $VM\,\frac{m}{V}\,V^3$, MV^2MV^2, $\frac{V}{m}\,MV^3M$

Textural profile symbol: XVM

X8 – This subgroup consists of textural profiles in which HV textures occupy 4 or more horizons. V textures usually occupy more than 2 layers and H textures occupy at least 1 layer,

e.g. MV^3HL, $LVHMV^2$, $L\,\frac{V}{h}\,HV^2\,\frac{v}{M}$

Textural profile symbol: XVH

X9 – This subgroup almost entirely consists of H and M textures which are interbedded and do not give any definite sequence. H textures usually occupy approximately 4 layers and M textures occupy at least 1 layer,

e.g. MH^4M, HMH^2MH, $MH^3\,\frac{H}{m}\,M\,\frac{H}{l}$

Textural profile symbol: XHM

X10 – This subgroup almost entirely H and L textures which are interbedded to give no definite sequence. H textures occupy approximately 4 layers and L textures occupy at least 1 layer,

e.g. H^2LH^3, LH^4L, $H^2\,\frac{h}{L}\,L\,H\,\frac{H}{l}$

Textural profile symbol: XHL

X11 - This subgroup are almost entirely comprised of M and V textures which are interbedded. They do not show any sequence. M textures occupy approximately 4 layers, and V textures occupy at least 1 layer,

e.g. M^2VMVM, $V\frac{V}{M}M^3\frac{m}{V}$, $MV\frac{V}{M}M^3$

Textural profile symbol: XMV

X12 - This subgroup almost entirely consists of M and H textures which are interbedded and do not give any definite sequence. M textures occupy at least 4 horizons, and H textures occupy 1 horizon or more,

e.g. MHM^3H, HM^4H, $\frac{H}{m}M^2H\frac{h}{M}M$

Textural profile symbol: XMH

X13 - This subgroup consists of textural profiles in which LM textures occupy 4 or more horizons. M textures usually occupy more than 2 layers and L textures occupy at least 1 layer, i.e.

LM^2VMV, $M\frac{m}{L}LVMH$, M^2VLM^2

Textural profile symbol: XML

1.5.4. Soil Phase:

Where soils have similar profile characteristics but vary in some physical feature significant to their use and management, the soils are classified as phases. Soil phases are based on external features, such as topography, stoniness, and any other characteristics that may occur within or below the solum 1/.

The following soil phases were recognized and mapped separately.

a - Depressional topography

b - Gently undulating topography. Slope is usually more than 2 percent.

h - Very fine texture. The clay content is usually more than 70 percent.

n - Alkalinity. E.S.P. is higher than 15.

p - Very low hydraulic conductivity. The H.C. is less than 0.1 cm/hr in the disturbed samples.

s - Salinity. Electrical conductivity is higher than 4 mmhos/cm at 25°C.

1/ SOLUM: The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soils include the A and B horizons.

w - Permanently high water table.

The symbols show above were used with the subgroup symbols to separate different phases within the same subgroups, i.e. D1h, D1w, X1b etc. These soil phases were identified and mapped separately as the scale of mapping permitted. Some of the phases mentioned above, such as salinity and alkalinity, were not mapped in the project area, because all the analytical results were below the specific limits. However, these phases can be used in the further studies of the backswamps and vertisols, as some of these areas are believed to have salinity and alkalinity problems. The same symbols were also used on the "specific problem areas" maps to indicate the type of the anticipated problems.

1.6. Irrigation Capability Classification:

1.6.1. General:

After the soil series and phases were established, they were placed into one of five irrigation land capability classes, depending upon their suitability and productivity under sustained sugar cane cultivation.

The standards used in the placement of soils in the various irrigation land classes are a modification of those proposed in the U.S.D.I. Bureau of Reclamation Manual (1). These standards were determined jointly with the Savannah Sugar Company Limited in Yola, N.E. State, and they are believed to have high practical value for the soils of the project area. The detailed standards used in the placement of lands in the various irrigation land classes are listed in Table 1.

Map symbols used on the general irrigation capability map are in accordance with the U.S.B.R. Manual, except that the symbols for actual land use were omitted on the assumption that the land clearing will be provided with the project construction. This makes a clearer and more readable irrigation capability map as a larger mapping unit could be used. The symbol for the land development cost was also omitted, since in the developing countries, the major land development costs, involving clearing and levelling are not land class-determining. These costs are a capital project investment costs rather than a private farm cost. As such a maximum land development cost per unit area determines the influence of this factor in separating arable and non-arable land, but does not influence class rank within the arable range 1/.

The major soil properties and qualities and related land factors were also taken into account in order to place soils in the various irrigation land classes. These properties were: soil texture, effective soil depth, available water-holding capacity, permeability, erosion, potential surface smoothness, slope, internal soil drainage, fertility, salinity and alkalinity. It was decided that the infiltration test results

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1/ According to the revised U.S.B.R. standards. Private communication with the U.S.B.R. Engineering and Research Center, Ref. No. 730-183, March 1, 1972.

on the disturbed samples will not be used as a factor to determine the capability class of lands, since all the backswamp deposits and part of the heavy textured levee deposits have hydraulic conductivities slower than 0.1 cm/hr. These results, however, are shown on a special map, indicating the areas having extremely low hydraulic conductivities, and therefore being special problem areas, which may require more careful management practices and further detailed drainage studies.

Four basic classes were used to group the arable lands according to their suitability for agricultural irrigation and one class to identify the non-arable lands. These classes represent lands with progressively less ability to repay project construction costs.

1.6.2. Capability Classes:

1.6.2.1. Class 1: lands that are highly suitable for irrigated sugar cane production, being capable of producing sustained and relatively high yields of sugar cane at reasonable costs. They are smooth lying flat lands. The soils are deep, fine textured, yet allowing easy penetration of roots, air and water and having free drainage and good available moisture capacity. These soils are free from harmful accumulation of salts. Both soil and topographic conditions are such that minimum erosion will result from irrigation, and land development can be accomplished at relatively low cost. They may require specific drainage networks due to the fine texture. These lands potentially have a relatively high payment capacity.

1.6.2.2. Class 2: lands that are moderately suitable for irrigated sugar cane production, being measurably lower than class 1 in productive capacity. They are not so desirable nor of such high value as lands of class 1 because of certain correctable or noncorrectable limitations. They may have a lower available moisture capacity, as indicated by coarser texture, or finer texture than class 1. They may be moderately saline which may limit the productivity. A drainage network may be required due to the fine textures or high water table. Any one of these limitations may be sufficient to reduce the lands from class 1 to class 2 but frequently a combination of two or more of them is operating. The class 2 lands have intermediate payment capacity.

1.6.2.3. Class 3: lands that are suitable for irrigated sugar cane production but are approaching marginality because of more extreme deficiencies in the soil, topographic or drainage conditions than described for class 2 lands.

They may have coarser texture, lower water holding capacities or shallower soil depth to the sand layers than class 2 lands. They may have uneven topography, moderate to high concentration of salts or restricted drainage, susceptible of correction but only at relatively high costs. Generally greater risk may be involved in farming class 3 lands than the better class of land, but under proper management they are expected to have adequate payment capacity.

1.6.2.4. Class 4: lands that have severe limitations for irrigated sugar cane production. They may have a coarser texture, lower available moisture capacity, or shallower depth to a sand layer than class 3 lands. They may have an inadequate drainage, or excessive salt content requiring intensive leaching or high E.S.P. They have a payment capacity lower than class 3 but they are considered irrigable because of the specific use anticipated.

1.6.2.5. Class 6: lands that are not suitable for irrigation. Generally class 6 lands have the following limitations: lands with soils of very coarse or very fine texture (having more than 70% clay), or very shallow soils over sand and gravel or hardpan; lands that have high concentrations of soluble salts or sodium. The class 6 lands generally do not have sufficient payment capacity to warrant consideration for irrigation.

LAND CLASSIFICATION ...

FEASIBILITY LEVEL LAND CLASSIFICATION

FOR SUGAR CANE PRODUCTION

SAVANNAH SUGAR CO. LTD., NIGERIA

Land Characteristics	Class I	Class II	Class III	Class IV
	S O I L S			
1. TEXTURE 0-90 cm.	SC,CL,SiC, C 1/	SCL, L 2/, SiL 2/, C 3/	SL 4/, L 5/ SiL 5/, Si	SL 6/, LS
90-150 cm	SCL - Clay	Loam-Clay	F.sand-clay	Sand-Clay
2. PROFILE DEPTH (After Development to F.S)	120 cm	90-120 cm	60-90 cm	60 cm
3. WATER HOLDING CAPACITY (A.W.H.C. in 120 cm)	15 cm	10-15 cm	5-10 cm	5 cm
4. PERMEABILITY Double cylinder infiltration methods: a. In 30 cm. cylinder cm/hr	2.0-6.5	0.8-2	0.6-0.8	0.4-0.6 or 6.25-6.5
b. Depth of Penetration	75-129	4.5-7.5	3.5-4.5	3.0-4.5
Disturbed samples	2.1-13.0	0.6-13.0	0.1-13.0	0.1-25.0
5. pH in water	4.5-8.3	4.5-8.3	4.5-8.3	4.5-8.3
6. Conductivity of Soil Extract, millimitres/cm 0-90 cm	0 - 2	2 - 4	4 - 6	6 - 8
90-160 cm	0 - 4	0 - 4	4 - 6	6 - 8
7. C.E.C. 0-100 cm	15	10	10	5.

1/ - less than 55% clay
2/ - more than 20 % clay
3/ - more than 55% and less than 70% clay
4/ - more than 10% clay
5/ - less than 20% clay
6/ - less than 10% clay.

Land Characteristics	Class I	Class II	Class III	Class IV
		S O I L S		
8. SODICITY				
Area effected %	0	0-5%	5-15%	20%
E.S.P. %	5	10	10-20	20%
9. BASE EXCHANGE				
0-100 cm (meq/100 gms)				
Ca	6	4	2	2
Mg	2	2	1	1
Na	0.2	0.2	0.2	0.2
K	1	0.8	0.4	0.4
		T O P O G R A P H Y		
10. SLOPE %	0.2-2.0	0.1-0.2	0.1	—
		D R A I N A G E		
11. Depth in cm to water table.				
loam or finer	150	100-150	75-100	25-75
sands	125	25-125	50-75	25-75
surface drainage	good	good	restricted	restricted
internal drainage	good	good	poor	very poor
depth to drainage barrier, (cm)	210	180-210	50-75	45-80

PART II

DESCRIPTION OF SOILS

2.1. GENERAL.

Differences in soil properties are generally caused by differences in one or more of the main soil-forming factors. Soil is the product of climate, vegetation and topography acting on parent material over a period of time. Climatic influences are mainly precipitation, temperature, and wind and water erosion. Furthermore, climate determines the type of vegetative cover and degree of biological activity. Topography governs drainage and moisture conditions, thus producing microclimatic variations which in turn produce variability in vegetation cover. The greatest influence, however, is exerted by the parent material itself with its inherent variability in such characteristics as texture and mineralogy. This alteration process, often referred to as weathering, and the extent of it, is entirely dependent upon the intensity and length of time that these soil forming factors have been operative.

The project area consists entirely of alluvial deposits of the Benue River. These deposits are comprised of levee deposits which have coarse to medium textures, with backswamp deposits behind them. Therefore most of the differences in the soil characteristics can be ascribed to the type of deposition, which is extremely variable, especially in the levee deposits. Backswamp deposits have fairly uniform textural characteristics, due to the uniform deposits of clay by the slowly flowing floods.

2.2. DESCRIPTION OF MAPPING UNITS.

A key to the soils of the project area is presented in Table 2. The soil groups and subgroups are listed alphabetically. The hectarage figures recorded in this table are estimated total area covered by each series.

The discussion of soil group and subgroups generally include description of the profile type, texture, topography and drainage; a schematic description of the representative profile and textural profile formula; and a discussion of the irrigation potential of the subgroups.

The approximate distribution of soils within the project area is shown on 1:10,000 scale soil maps (Sheets 8, 9, 11 and 12). The soil characteristics and the qualities of the textural subgroups are summarized in Table 2.

Table 2 - Soils characteristics and the qualities of the textural groups and subgroups.

Textural Subgroup	Textural Profile Type	Dominant Texture	Other Textural Inclusions	Textural Profile Symbol
Group A - Almost entirely LM textures				
A1	LM	-	-	A
A2	"	L	-	AL
A3	"	M	-	AM
A4	"	L	M	ALM
A5	"	M	L	AML
Group B - LM textures overlie HV textures				
B1	LM/HV	-	-	B
B2	Shallow LM/Deep HV	H	-	B_sH
B3	" " " "	V	-	BsV
B4	" " " "	H	V	HsHV
B5	" " " "	V	H	BsVH
B6	Deep LM/Shallow HV	L	-	BdL
B7	" " " "	M	-	BdM
B8	" " " "	L	M	BdLM
B9	" " " "	M	L	BdML
Group C - HV textures overlie LM textures				
C1	HV/LM	-	-	C
C2	Shallow HV/Deep LM	L	-	CsL
C3	" " " "	M	-	CsM
C4	" " " "	L	M	CsLM
C5	" " " "	M	L	C_sML
C7	Deep HV/Shallow LM	V	-	CdV
C9	" " " "	V	H	CdVH
Group D - Almost entirely HV textures				
D1	HV	V	-	DV
D2	"	H	-	DH
D3	"	V	H	DVH
Group X - LM and HV textures are interbedded				
X1	No sequence	-	-	X
X2	" "	L	-	XL
X3	" "	M	-	XM
X5	" "	V	-	XV
X6	" "	V	L	XVL
X7	" "	V	M	XVM
X10	" "	H	L	XHL
X11	" "	M	V	XMV
X12	" "	M	H	XMH
X13	" "	M	L	XML
X14	" "	H	V	XHV
X15	" "	L	V	XLV

- Subgroup A1 (92 acres)

This subgroup consists of textural profiles which are almost entirely of coarse and coarse-medium textures. Meidum-coarse textures occupy equal proportions of the textural profile. However, sandy strata may occur at any depth interbedded with coarse-medium textures to give no definite sequence. Sand layers sometimes can also be found at the surface. They are usually found close on the river levees or nearby.

Although the color of the deposition may vary from one place to another, they generally have very dark grayish colored surface layers. Lower layers are usually of lighter color, which may vary from brown to yellowish brown. They usually have fine, faint mottles throughout the profile.

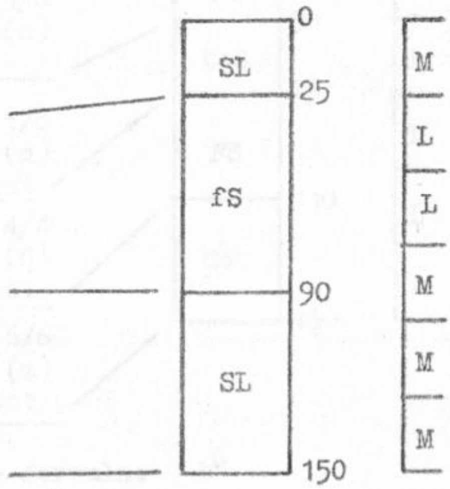
A typical profile of the A1 subgroup is described below schematically.

Soil pit No: 23S-15

Color: 10 YR 3/2
Cons.: hard (d)
Mottles: faint

Color: 10 YR 5/6
Cons.: loose (d)
Mottles: faint

Color: 10 YR 5/6
Cons.: soft (m)
Mottles: faint



Textural profile formula: $ML^2 \frac{L}{m} M^2$

Textural profile symbol: A

- Irrigation Potential: Subgroup A1 is not suitable for irrigated sugar cane production due to extreme deficiencies in soil characteristics. The soils have low water holding capacities due to the coarse texture and relatively rapid hydraulic conductivities. Although they do not have accumulation of any harmful salts, their cation exchange capacities and natural fertilities are low.

- Subgroup A2 (74 acres)

This subgroup consists of textural profiles which are almost entirely comprised of coarse textures. Coarse and fine sands occupy the entire profile. Their color may vary, depending upon the type of the deposition. However, they generally have very dark grayish brown surface layers due to the accumulation of organic matter. Lower layers may have a color ranging from dark yellowish brown to yellowish brown.

A typical profile of subgroup A2 is described below:

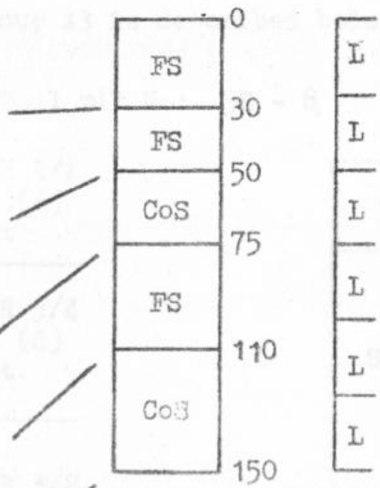
Color: 10 YR 3/2
Cons.: hard (d)
Mottles: faint

Color: 10 YR 5/6
Cons.: loose (d)
Mottles: faint

Color: 10 YR 5/8
Cons.: loose (d)
Mottles: distinct

Color: 10 YR 4/4
Cons.: loose (d)
Mottles: distinct

Color: 10 YR 6/6
Cons.: loose (m)
Mottles: distinct



Textural profile formula: L^6

Textural profile symbol: A L

- Irrigation Potential: This subgroup has no potential for irrigated sugar cane production. Main limiting factors are the low water holding capacity, rapid hydraulic conductivitiy, low C.E.C., low natural fertility and coarse texture throughout the profile.

- Subgroup A3 (83 acres)

This subgroup consists of textural profiles which are almost entirely comprised of coarse-medium (m) textures. The m textures are usually sandy loams, loams and silt loams which contain less than 20 percent clay. The occurrence and the arrangement of these textural units are rather haphazard and do not give any definite sequence throughout the profile.

The color of the layers is very variable, but the surface horizons generally have a very dark grayish color. Lower layers have colors varying from very dark grayish gray to yellowish brown. Faint and distinct, brown mottles dominate throughout the profile.

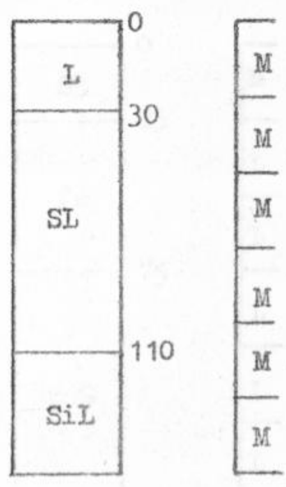
A typical profile of subgroup A3 is described below schematically.

Soil pit No: 5S - 8

SColor: 10 YR 3/2
Cons.: hard (d)
Mottles: faint

Color: 10 YR 5/4
Cons.: hard (d)
Mottles: faint

Color: 10 YR 3/2
Cons.: hard (d)
Mottles: prominent



Textural profile formula: M^6

Textural profile symbol: AM

- Irrigation Potential: This subgroup is suitable for sugar cane production, but approaching marginality. These lands are classified as class 3 for irrigation due to the extreme deficiencies in soil characteristics. The main limiting factors are moderately coarse texture, low water holding capacities in some layers, and low C.E.C. In addition, due to the textural characteristics, a nematode problem is also anticipated. Their productivity for sugar cane production is low, but under special management they may have an adequate payment capacity.

- Subgroup A4 (72 acres)

This subgroup is comprised of profiles which consist of coarse and coarse-medium textures. Coarse textures usually dominate and occupy four or more horizons. Coarse-medium textures occupy at least one horizon. There is no definite sequence of occurrence and the combination of these textural layers, however, coarse-medium textures generally occur on the surface.

The color of the various layers show many variations. The surface layers usually have very dark grayish colors due to the organic matter accumulation. Lower layers have colors ranging from dark yellowish brown to yellowish brown. They are slightly mottled throughout the profile.

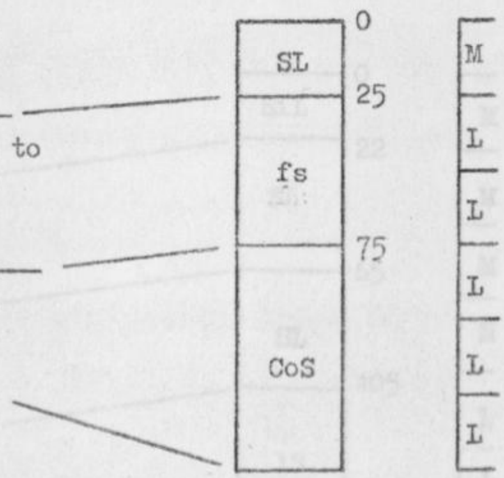
A typical profile of subgroup A4 is described below schematically.

Soil pit No: 8S - 10

Color: 10 YR 2/2
Cons.: hard (d)
Mottles: faint

Color: 10 YR 3/4 to
10 YR 5/6
Cons.: loose (d)
Mottles: faint

Color: 10 YR 5/6
Cons.: loose (d)
Mottles: distinct



Textural profile formula: ML^5

Textural profile symbol: ALM

- Irrigation Potential: This subgroup has no potential for development for an irrigated sugar cane production due to the extreme deficiencies in soil characteristics. The main limiting factor is the coarse texture dominating throughout the profile. In relation to the texture they may have a low available water capacity, low C.E.C. and low natural fertility. Their productivities are very low and do not have any repayment capacity.

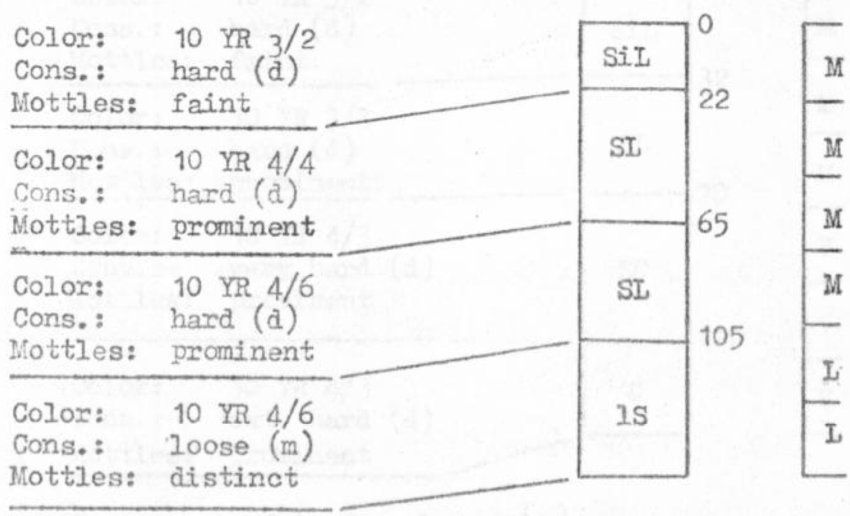
- Subgroup A5 (227 acres)

This subgroup is comprised of coarse and coarse medium textures, in which coarse-medium textures are dominating. Coarse textures usually occupy at least one horizon while coarse medium textures are found in four or more horizons. The texture of the coarse-medium group ranges from sandy loam to silt loam which contains less than 20 percent clay. Coarse textures are usually found interbedded with the coarse-medium textures, giving no definite sequence. However, surface layers are usually of sandy loam or silt loam textured, and the sandy stratum occurs within the lower horizons.

Although the surface horizons have very dark grayish brown color, lower horizons have colors ranging from dark yellowish brown to brownish yellow. Upper horizons are usually faintly mottled, and the intensity of mottles usually increases with depth.

A typical profile of subgroup A5 is described below schematically.

Soil pit No.: 11S - 2



Textural profile formula: M^4L^2

Textural profile symbol: AML

- Irrigation Potential: This subgroup has been classified as class 3, being suitable for irrigation but approaching marginality due to the extreme soil deficiencies for sugar cane production. The main limiting factors are the coarse and coarse-medium textures which dominate throughout the profile. Their C.E.C. is estimated to be low and the lower horizons especially have very low available moisture capacity. The nematode problem is also anticipated due to the medium textures. Although their productivity for sugar cane production is fairly low, these soils are believed to have an adequate payment capacity under proper management.

- Subgroup B1 (87 acres)

This subgroup consists of textural profiles in which coarse-medium textures overlie the fine and very fine textures. Both textural group occupy approximately equal proportions of the profile depth. Coarse and coarse-medium textures consist of silt loam to loam textures which contain less than 20 percent clay. Lower horizons are occupied by fine textured deposits in which the texture ranges from clay loam to clay.

The color of the surface horizons ranges from very dark grayish brown to dark brown. Lower horizons may also have darker color because of the imperfect drainage. Surface layers are faintly mottled, but the intensity and the density of the mottles increase after 30 cm. They are imperfectly to poorly drained due to the fine textured slowly permeable lower layers.

A typical profile of the subgroup B1 is described below schematically.

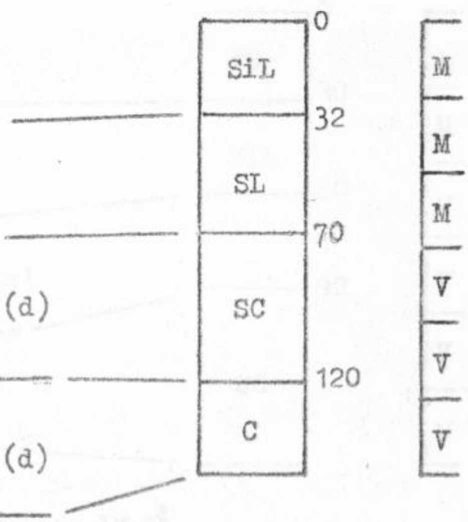
Soil pit No: 2N-2

Color: 10 YR 3/2
Cons.: hard (d)
Mottles: faint

Color: 10 YR 3/3
Cons.: hard (d)
Mottles: prominent

Color: 10 YR 4/3
Cons.: very hard (d)
Mottles: prominent

Color: 10 YR 4/3
Cons.: ext. hard (d)
Mottles: prominent



Textural profile formula: $M^3 V^3$

Textueal profile symbol: B

- Irrigation Potential: These soils are suitable for an irrigated sugar cane production, but approach marginality because of the extreme deficiencies in soil characteristics. They are classified as class 3 due to the coarse textured nature of the surface layers which are usually up to 75 cm thick. Consequently, the water holding capacity and C.E.C. of these layers are low, causing low productivity and lowering the capability class. Although the lower layer may provide enough available moisture and may have an adequate C.E.C. and natural fertility, surface layers which are the most important, may present physical and biological problems for sugar cane, such as drought and nematodes. However, under proper management, they are believed to have an adequate payment capacity and fair productivity for sugar cane.

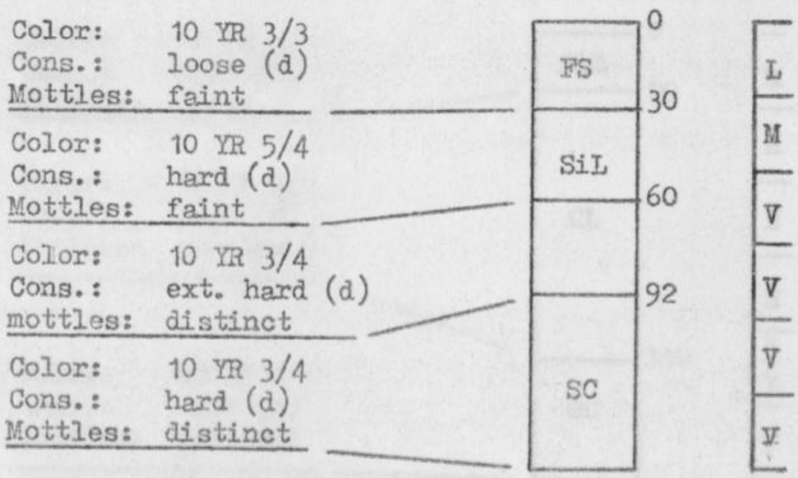
- Subgroup B3 (741 acres)

This subgroup consists of textural profiles in which coarse-medium textures overlie fine-very fine textures. Coarse-medium textures are usually less than 50 cm deep and range from fine sand to silt loam. Lower layers consist of heavy textured deposits with a texture varying from sandy clay loam to clay. These layers have slow hydraulic conductivities, causing poor to imperfect drainage.

The color of the surface layers is usually dark grayish brown due to the organic matter. Lower layers have somewhat lighter colors and generally are mottled throughout the profile. The intensity of the mottles increases with the depth.

A typical profile of subgroup B3 is described below:

Soil pit No: 23S - 10



Textural profile formula: LMV^4

Textural profile symbol: BsV

- Irrigation Potential: These soils are classified as class 3 for sugar cane production. They are suitable for irrigation but approaching marginality due to the textural deficiencies of the surface layers, which may be up to 60 cm thick. The coarse nature of these layers cause low available moisture capacity, low C.E.C. and low natural fertility. In addition they may present some microbiological problems to the sugar cane. However, under proper management they are believed to have an adequate payment capacity and moderate to low productivity for an irrigated sugar cane production.

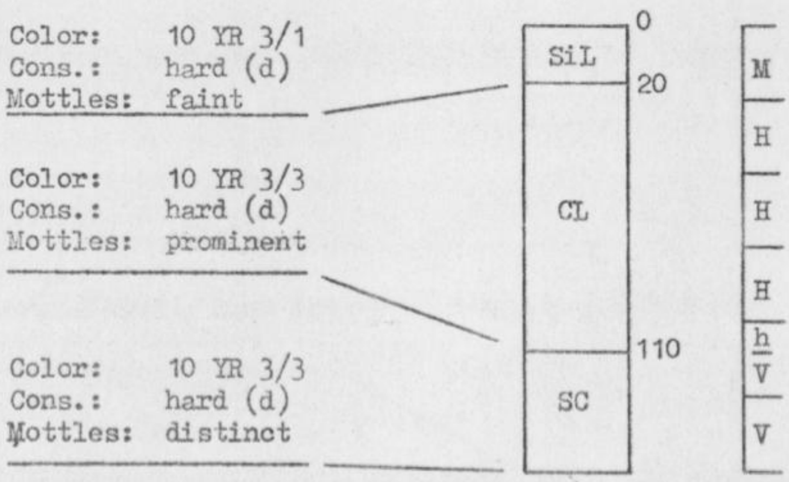
- Subgroup B4 (7 acres)

This group consists of textural profiles in which coarse and coarse-medium textures overlie the fine and very fine textures. Coarse textures occupy usually less than 50 cm depth and of fine sand to sandy loam texture which contains less than 20 percent clay. The textures of the lower layers are also variable, ranging from sandy clay loam to clay.

Although the color of the various deposits vary considerably, a dark color usually dominates throughout the profile. Surface horizons are of very dark grayish color, while the lower layers are of dark grayish color due to the imperfect drainage conditions of the soils. Distinct and/or prominent mottling dominates almost the entire profile.

A typical profile of the subgroup B4 is described below:

Soil pit No: 10S - 9



Textural profile formula: $MH^3 \frac{h}{V} V$

Textural profile symbol: B_8HV

- Irrigation Potential: These soils are classified as class 2, being moderately suitable for an irrigated sugar cane production. The fine textured lower layers supply adequate available moisture and have high C.E.C. and natural fertility status. Although the hydraulic conductivities of these layers are low, lack of gleying indicated that the water table, which may be high during the rainy season, is not permanent. However, they may require an additional drainage network. Their capability actually depends upon the thickness of the coarse textured surface horizons. Where the depth of these horizons exceed 25 cm, the capability class should be lowered one class, due to the coarse textured nature of these layers, which may create some certain physical and microbiological problems. However, under proper management, these soils may have a fairly high yield of sugar cane.

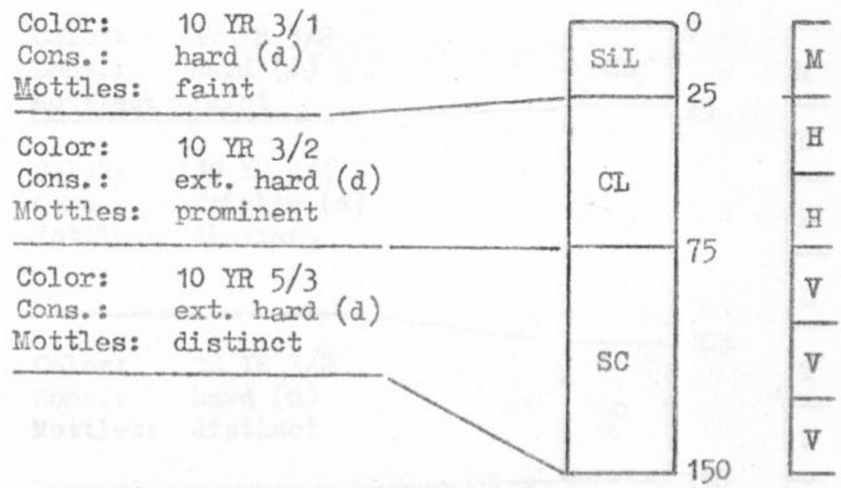
- Subgroup B5 (12 acres).

This subgroup consists of textural profiles in which coarse and coarse-medium textures (LM) overlie medium-fine and fine textures (HV). LM textured surface layers are shallow and occupy a layer of less than 50 cm thick. Fine textured deposits (V) occupy more than two layers and medium-fine textured deposits occupy at least one layer in the lower horizons. There is no definite sequence in the arrangement of H and V layers.

The color of the surface horizons is usually very dark grayish brown due to the accumulation of organic matter. The color of the lower layers ranges from dark grayish brown to gray. They are usually mottled throughout the profile, due to the fine textured characteristics of the lower horizons.

A typical profile of the subgroup B5 is described below:

Soil pit No.: 10N - 4



Textural Profile formula: MH^2V^3

Textural profile symbol: B_s VH

- Irrigation Potential: This subgroup is moderately suitable for irrigated sugar cane production. The main limiting factor is the coarse or coarse-medium textured surface horizons which are up to 50 cm thick. Although the lower horizons supply enough available water and have fairly high cation exchange capacity, the surface horizons present some physical and microbiological problems. They capability of this subgroup actually depends upon the thickness of the surface layers. Where the surface horizons are shallow (less than 25 cm) they are considered as class 2, being moderately syitable for irrigation. Where the surface horizons are deep, they are considered as class 3, being suitable for irrigation, but approaching marginality because of the undesirable characteristics of the upper layers for sugar cane production.

- Subgroup B6 (73 acres)

This subgroup consists of textural profiles in which coarse-medium textures overlie medium-fine and fine textures. Coarse-medium or coarse textured layers are usually deep, occupying more than 100 cm in the textural profile. Lower layers are comprised of fine textured deposits which are less than 50 cm thick. The texture of upper layers ranges from sand to loam, but these layers do not have any definite sequence, as the sandy strata can occur at any depth, interbedded with loam or sandy loam textured deposits.

The surface layers usually have a dark grayish brown color. The color of the lower layers range from dark grayish brown to dark yellowish brown. They are usually mottled throughout the profile and the intensity of the mottles increases with depth.

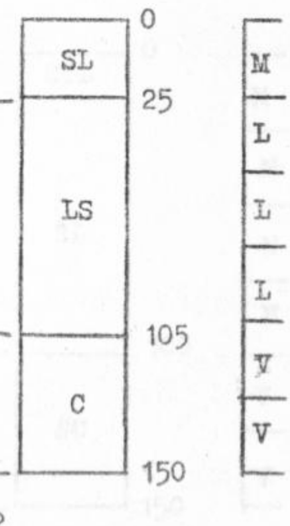
A typical profile of the subgroup B6 is described below:

Soil pit No: 4S - 7

Color: 10 YR 3/2
Cons.: hard (d)
Mottles: faint

Color: 10 YR 4/4
Cons.: friable (d)
Mottles: distinct

Color: 10 YR 3/2
Cons.: hard (d)
Mottles: distinct



Textural profile formula: $ML^3 V^2$

Textural profile symbol: Bd L

- Irrigation Potential: This subgroup is classified as class 4, being marginally suitable for irrigated sugar cane production due to the extreme limitation of the thick surface layers. The main limiting factors are the coarse texture, low available moisture capacity, low cation exchange capacity and low natural fertility. They are considered as irrigable, because the fine textured lower horizons are able to supply enough available moisture for sugar cane, and are able to hold the irrigation water within the profile due to their low hydraulic conductivities. These soils have low productivity and low payment capacity under sugar cane cultivation.

- Subgroup B7 (242 acres)

This subgroup consists of textural profiles in which thick coarse and coarse-medium textures overlie the medium-fine and fine textured deposits. LM textured layers are usually thicker than 75 cm and of textures varying from coarse sandy loam to silt loam. They are usually interbedded and do not give any definite sequence. Lower layers are of sandy clay loam to clay textures and are usually less than 50 cm thick.

The surface color is usually uniform throughout the unit and is generally dark grayish brown. Lower layers have a wide variety of colors, ranging from dark yellowish brown to yellowish brown. They have very slow hydraulic conductivity, which is reflected by mottlings in the upper profile. They are imperfectly to poorly drained soils due to the slowly permeable fine textured lower horizons.

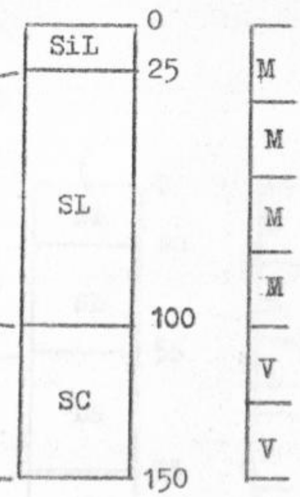
A typical profile of subgroup B7 is described below:

Soil pit No: 27S - 29

Color: 10 YR 3/2
Cons.: hard (d)
Mottles: faint

Color: 1010 YR 4/4
Cons.: hard (d)
Mottles: faint

Color: 10 YR 3/3
Cons.: hard (d)
Mottles: faint



Textural profile formula: $M^4 V^2$

Textural profile symbol: Bd M

- Irrigation Potential: These soils are marginally suitable for sugar cane production due to the coarse textured nature of the thick upper layers. However, if the clay content of these layers exceeds 20 percent they should be upgraded by one class. The upper layers have a low available moisture capacity, low cation exchange capacity, and moderately rapid hydraulic conductivity. Although the lower layers are of fine texture and have an adequate moisture supply capacities, they are found in the textural profile deeper than 100 cm, and therefore their influence of sugar cane growth is minimal. These soils have fairly low productivity and low payment capacity under sugar cane cultivation.

- Subgroup B8 (42 acres)

This subgroup consists of textural profiles in which the coarse and coarse-medium textured deposits overlie the medium-fine and fine textures deposits. The coarse and coarse-medium textured deposits have a texture ranging from coarse sand to silt loam and of more than 100 cm thick. A sandy strata occurs at any depth, usually interbedded with loamy textured deposits and giving no definite sequence. Coarse textured deposits usually occupy more than two layers and coarse-medium textures occupy at least one layer of the upper textural profile. Lower layers are comprised of medium-fine and fine textures of sandy clay loam to clay, and are less than 50 cm thick.

The color of the surface horizons ranges from dark gray to very dark grayish brown. Lower horizons are of variable color ranging from dark brown to yellowish brown. They are mottled throughout the profile due to the fine textured lower horizons which have a low hydraulic conductivity. The intensity of mottlings increases with depth.

A typical profile of the subgroup B8 is described below:

Soil pit NoL 1N - 10

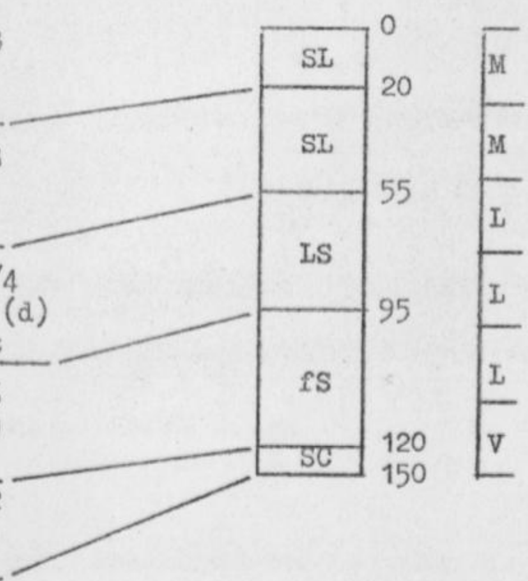
Color: 10 YR 3/3
Cons.: hard (d)
Mottles: distinct

Color: 10 YR 4/3
Cons.: hard (d)
Mottles: distinct

Color.: 10 YR 4/4
Cons.: S. hard (d)
Mottles: distinct

Color: 10 YR 5/6
Cons.: loose (d)
Mottles: distinct

Color: 10 YR 4/2
Cons.: hard (d)
Mottles: distinct



Textural profile formula: $M^2 L^3 V$

Textural profile symbol: Bd L M

- Irrigation Potential: This subgroup is not suitable for irrigation due to the extreme deficiencies in soil characteristics. The main limiting factor is the coarse texture which results in a low available moisture capacity and low C.E.C. In addition sandy strata may occur at any depth with a variable thickness. Although the lower horizons are of fine texture, they usually occur below the 100 cm and their beneficial effects upon the water holding capacity and the natural fertility are somewhat limited. These soils are assumed to have very poor productivity and not enough payment capacity to warrant any irrigation for sugar cane production.

- Subgroup B9 (133 acres)

This subgroup consists of profiles in which coarse and coarse-medium textures overlie medium-fine and fine textures. Upper layers are of sandy to silt loam textured and are more than 75 cm thick. Medium-coarse textured deposits occupy two or more horizons and coarse textured layers occupy at least one horizon in the upper horizons. Lower horizons are of usually clayey textures and up to 50 cm thick.

The color of the top layer is usually dark gray to dark grayish brown due to the accumulation of organic matter. Lower horizons are of variable color ranging from yellowish brown to dark brown. They are imperfectly drained soils due to the slow hydraulic conductivities of the lower horizons. The textural profile is usually mottled from the surface on down and the intensity of the mottles increases with depth.

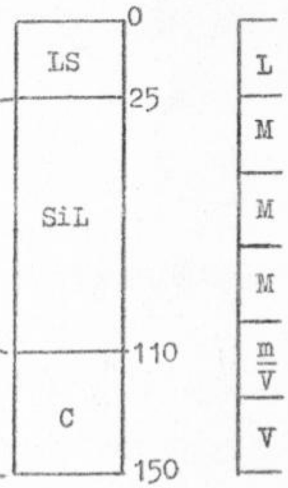
A typical profile of the subgroup B9 is described below:

Soil pit No: 1N - 11

Color: 10 YR 4/3
Cons.: S. hard (d)
Mottles: faint

Color: 10 YR 5/4
Cons.: S. hard (d)
Mottles: prominent

Color: 10 YR 4/3
Cons.: hard (d)
Mottles: prominent



Textural profile formula: $LM^{3}\frac{m}{V}V$

Textural profile symbol: BdML

- Irrigation Potential: These soils are considered as irrigable but approaching marginality because of the extreme deficiencies in soil characteristics. Although they are classified as class 3 for irrigated sugar cane production, their capabilities depend upon the clay content of the coarse-medium textured layers. They must be downgraded one class where the clay content is lower than 10 percent. The main limiting factor is the coarse textured nature of the upper layers, which in turn results in a low C.E.C., moderately rapid hydraulic conductivity and low natural fertility. In addition, a sandy stratum can occur at any depth, with a variable thickness. Although the lower layers can provide enough available water and plant nutrients, they occur below 100 cm depth, and their influence on the growth of the sugar cane at early stage is somewhat restricted. They have a low payment capacity, but under proper management they are believed to have an adequate productivity for irrigated sugar cane production.

- Subgroup C1 (100 acres)

This subgroup consists of textural profiles in which medium-fine and fine textures overlie the coarse and coarse-medium textured deposits. HV textures and IM textures occupy approximately equal proportions of the Upper textural profile. Medium-fine and fine textures are usually comprised of textures varying from sandy clay loam to clay. The lower layers are comprised of textures varying from coarse sand, to silt loam. The sandy strata may occur interbedded with the medium textured deposits, but below the 75 cm depth.

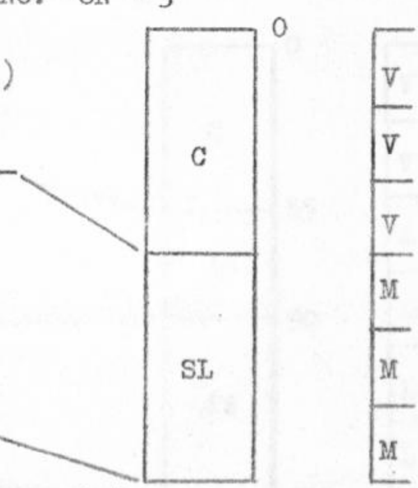
The surface layers have a fairly uniform dark grayish color up to 75 cm. The lower horizons have a lighter color, ranging from yellowish brown to brown. They are imperfectly to poorly drained due to the fine textured, slowly permeable upper horizons, and this is reflected by distinct mottlings throughout the profile.

A typical profile of the subgroup C1 is described below:

Soil pit No: 8N - 3

Color: 10 YR 3/2
Cons.: ext. hard (d)
Mottles: prominent

Color: 10 YR 4/3
Cons.: friable (m)
Mottles: prominent



Textural profile formula: V^3M^3
Textural profile symbol: C

- Irrigation Potential: This subgroup is classified as class 2, being moderately suitable for irrigation for sugar cane production. The main limiting factor is the coarse or coarse-medium textured subsoil which occur after 75 cm depth. Although the physical and chemical characteristics of the surface layer are ideal for sugar cane growth, the coarse textured nature of the lower horizons may cause some drought problems in the later stage of the growth, due to the low water holding capacities of these layers. These soils are believed to have a moderate productivity and good payment capacity under sugar cane cultivation.

- Subgroup C2 (70 acres)

This subgroup consists of textural profiles in which the medium-fine and fine textured deposits overlie the coarse and medium-coarse textured deposits. Fine textured layers are shallow, occupying less than 75 cm thickness of the surface layers. They are of sandy clay loam to clay textured. Lower horizons have a texture varying from coarse sand to loam which is up to 125 cm thick. Coarse textured deposits usually occupy more than two layers, while the coarse-medium textures occupy at least one layer.

The color of the surface horizons varies from very dark gray to grayish brown. Lower horizons are of lighter color, ranging from dark brown to yellowish brown. Surface horizons are highly mottled due to the slow hydraulic conductivities of the fine textured layers. The intensity of the mottles decreases with depth as the coarser textured lower horizons provide somewhat freer drainage.

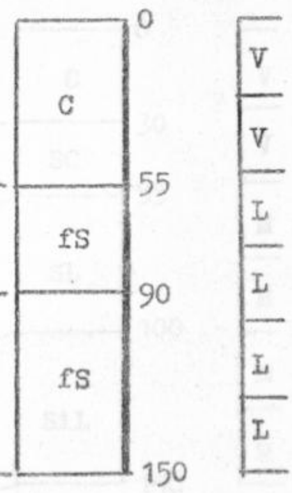
A typical profile of the subgroup C2 is described below:

Soil pit No: 21N - 12

Color: 10 YR 3/2
Cons.: ext. hard (d)
Mottles: prominent

Color: 10 YR 6/6
Cons.: loose (d)
Mottles: distinct

Color: 10 YR 5/4
Cons.; loose (d)
Mottles: distinct



Textural profile formula: $V^2 L^4$

Textural profile symbol: $C_s L$

- Irrigation Potential; This subgroup has been classified as class 3 for irrigated sugar cane, being suitable for irrigation, but approaching marginality due to the extreme deficiencies of their thick lower horizons. The main limiting factor is the coarse texture and consequently low available w water holding capacity, low C.E.C. and low natural fertility. Although the physical and chemical characteristics of the surface layers are ideal for sugar cane cultivation, these layers are shallow, and the plantation may suffer from drought in the later stage of growth due to the low water storage capacity of the lower horizons. Therefore, it is assumed that these soils have low productivity and low payment capacity under sugar cane cultivation.

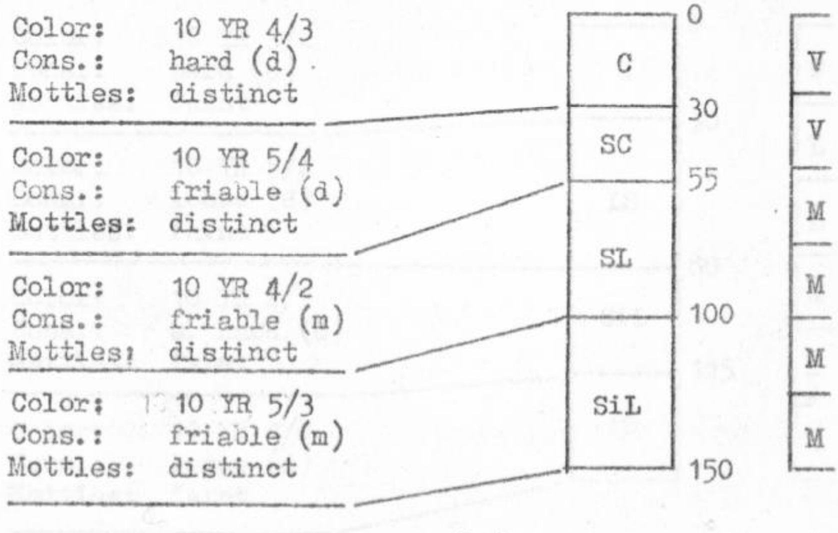
- Subgroup C3 (93 acres)

This subgroup consists of textural profiles in which the medium-fine and fine textured deposits overlie the coarse-medium deposits. HV deposits are usually shallow, being 50 cm or less in depth, and are comprised of textures varying from sandy clay loam to clay. M textures which are usually deeper than 75 cm are comprised of textures varying from sandy loam to silt loam which have less than 20 percent clay.

The color of the surface horizons is usually lighter than the other subgroups, raning from brown to yellowish brown. These layers have marked, distinct mottles which indicate a perfect to poor drainage due to the heavy textured nature of the deposits. Medium-coarse textured lower horizons are usually dark grayish brown to grayish brown colored, due to the poor drainage conditions of these soils. These layers are also highly mottled.

A typical profile of the subgroup C3 is described below:

Soil pit No: 5N - 12



Textural profile formula: V^2M^4

Textural profile symbol: C_sM

- Irrigation Potential: These soils have been classified as class 2, being moderately suitable for irrigation for sugar cane production. Although the surface layers are very good soils for sugar cane, the coarse-medium textured characteristic of the deep subsoils somewhat limits the sugar cane growth at the later stage. The main problems are the lower water holding capacity and low C.E.C. due to the medium-coarse textures. These soils are believed to have moderate productivity and payment capacity for irrigated sugar cane production.

- Subgroup C4 (7 acres)

This subgroup consists of textural profiles in which medium-fine and fine textured material overlie the coarse and coarse-medium material. HV textures are usually less than 50 cm thick and are of textures varying from sandy clay loam to clay. LM textures which are usually deeper than 75 cm are comprised of textures varying from coarse sand to sandy loam. Coarse textured deposits usually occupy more than two layers and coarse-medium textured deposits occupy at least one layer in the lower profile.

Surface horizons are usually very dark grayish colored due to the high organic matter content. Lower horizons have lighter colors ranging from dark brown to yellowish brown. They are mottled throughout the profile, indicating an imperfect drainage condition. The intensity of the mottles usually increases with depth.

A typical profile of subgroup C4 is described below:

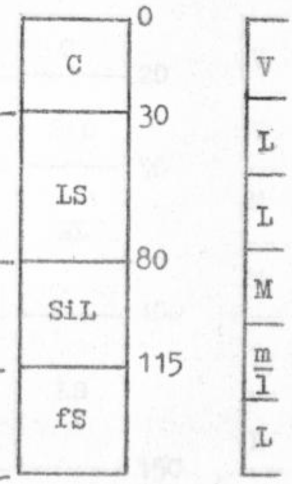
Profile No: 5S - 16

Color: 10 YR 3/2
Cons.: hard (d)
Mottles: faint

Color: 10 YR 5/4
Cons.: loose (d)
Mottles: faint

Color: 10 YR 4/3
Cons.: s. hard (d)
Mottles: faint

Color: 10 YR 4/4
Cons.: loose (d)
Mottles: faint



Textural profile formula: $VL^2M\frac{m}{l}L$

Textural profile symbol: $C_s LM$

- Irrigation Potential: These soils are marginally suitable for irrigation due to the extreme deficiencies of the lower horizons. The main limiting factor is the coarse texture, which, in turn, results in a low water holding capacity, low C.E.C., rapid hydraulic conductivity and low natural fertility. Due to the low water storage capacities of the lower horizons, sugar cane plants may suffer from dought during the dry season, or these soils will require more irrigation water. The productivity of this subgroup is low, and and they are believed to have a low payment capacity, even under proper management.

- Subgroup C5 (14 acres)

This subgroup is comprised of textural profiles in which HV textured deposits. HV textures are usually less than 50 cm deep and are of textures ranging from sandy clay to clay. LM textures are usually deep, occupying more than 75 cm of the lower profile. Medium-coarse textured materials usually occupy more than 2 layers and coarse textured deposits occupy at least one year in the textural profile.

The surface horizons have a dark grayish color. These horizons are usually strongly mottled due to very slow hydraulic conductivities. Lower horizons have colors varying from dark brown to dark yellowish brown. These layers are faintly mottled, because the coarser textures provide somewhat better drainage than the surface layers. However, the intensity of mottles usually increases with depth.

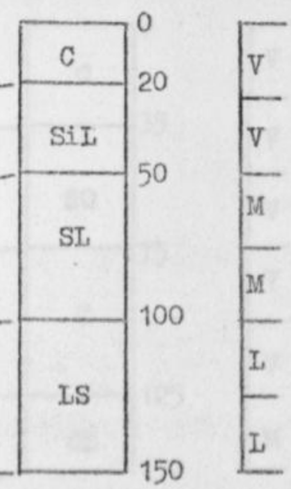
A typical profile of the subgroup C5 is described below:

Color: 10 YR 3/2
Cons.: ext. hard (d)
Mottles: prominent

Color: 10 YR 3/4
Cons.: hard (d)
Mottles: faint

Color: 10 YR 3/4
Cons.: hard (d)
Mottles: faint

Color: 10 YR 4/4
Cons.: friable (m)
Mottles: prominent



Textural profile formula: $V^2 M^2 L^2$

Textural profile symbol: C_s M L

- **Irrigation Potential:** This subgroup has been classified as class 2, being moderately suitable for irrigated sugar cane production. The main limiting factor is the coarse textured layers which occur in the lower textural profile. However they are believed to have a moderately high productivity and payment capacity under proper management.

- Subgroup C7 (700 acres)

This subgroup is comprised of profiles in which fine textures overlie coarse and medium-coarse textures. Fine textured deposits are usually deep, occupying more than 75 cm depth and varying from sandy clay to clay. Coarse and medium-coarse textured materials occupying the lower portion of the profile and are usually less than 50 cm thick. They are comprised of textures varying from coarse sand to sandy loam. The surface layers generally have a dark grayish color due to the accumulation of organic matter. Lower horizons have somewhat lighter colors ranging from dark brown to dark yellowish brown. These soils are strongly mottled throughout the profile due to the low hydraulic conductivities of the fine textured deposits.

A typical profile of the subgroup C7 is described below:

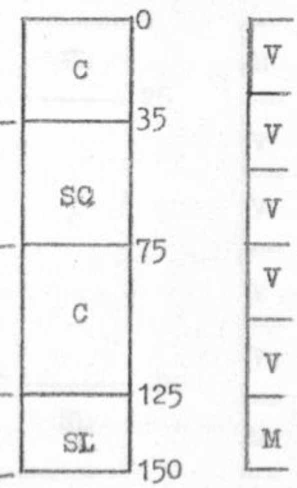
Soil pit No: 23S - 3

Color: 10 YR 3/2
Cons.: ext. hard (d)
Mottles: distinct

Color: 10 YR 3/4
Cons.: ext. hard (d)
Mottles: distinct

Color: 10 YR 3/2
Cons.: ext. hard (d)
Mottles: distinct

Color: 10 YR 4/3
Cons.: hard (d)
Mottles: faint



Textural profile formula: V^5M

Textural profile symbol: Cd V

- Irrigation Potential: These soils are highly suitable for sugar cane production. They have been classified as class 1 and are considered among the best soils for sugar cane. However their capabilities depend upon the thickness and nature of the LM layers. When these layers are comprised of coarse sand and up to 50 cm thick in the lower profile, they may be downgraded by one class. However, they are believed to have a high productivity and a good payment capacity for irrigated sugar cane production.

- Subgroup C9 (33 acres)

This subgroup is comprised of textural profiles in which medium-fine and fine textured deposits overlie the coarse and coarse-medium textured deposits. HV textures are usually deeper than 75 cm and consists of textures varying from sandy clay loam to clay. Fine textures occupy more than 2 layers and medium-fine textured deposits occupy at least one layer in the upper textural profile. The textures of the coarse or coarse-medium deposits vary from coarse sand to silt loam in which the clay content is less than 20 percent.

The colors of the surface layers are usually dark gray to dark brown. These layers are strongly mottled due to the slow hydraulic conductivities of the fine textured layers. Lower horizons have yellowish brown color and faintly mottled due to the medium textures which provides fairly free drainage.

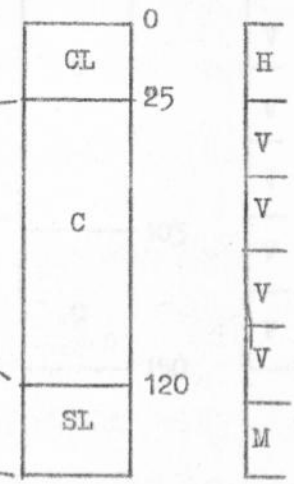
A typical profile of the subgroup C9 is described below:

Soil pit No: 19N - 1

Color: 10 YR 3/1
Cons.: hard (d)
Mottles: faint

Color: 10 YR 3/3
Cons.: ext. hard (d)
Mottles: distinct

Color: 10 YR 5/6
Cons.: S. hard (d)
Mottles: faint



Textural profile formula: HV^4M

Textural profile symbol: Cd VH

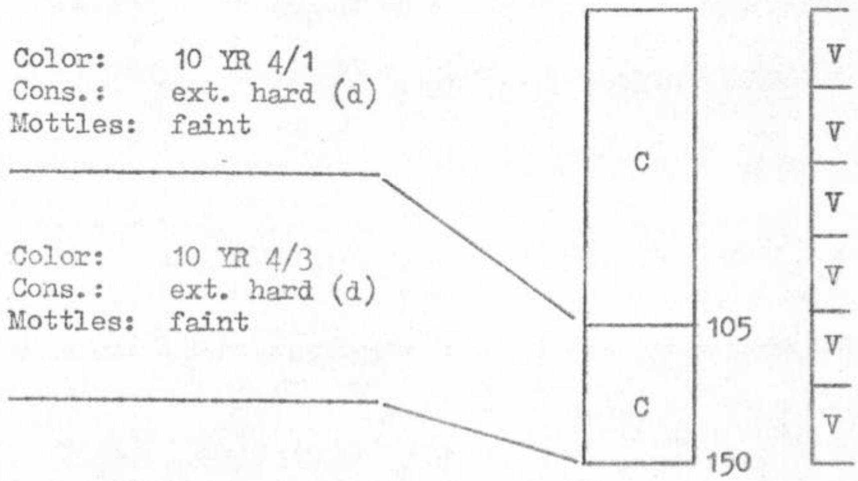
- Irrigation Potential: This subgroup has been classified as class 1, being highly suitable for irrigated sugar cane production. The soils have a high available moisture capacity, high C.E.C. They are free of accumulation of harmful salts and their E.S.P. is low. The only limiting factor seems to be the medium-coarse textured lower layers which are up to 50 cm thick. The irrigation capabilities of this subgroup largely depend upon the thickness and the textural characteristics of this layer. Where the LM layer is thick and consists of mostly coarse textured deposits, their capabilities should be downgraded by one class.

- <u>Subgroup D1 (5,264 acres)</u>

This subgroup consists of textural profiles which are almost wholly comprised of fine textured deposits. The clay texture dominates throughout the profile and they cover a rather large area within the project. The color of the deposits are more or less uniform ranging from dark brown to dark gray, with faint to distinct mottles throughout the profile. The clay content may sometimes be as high as 80 percent. They have extremely slow permeability, and their hydraulic conductivities are less than 0.1 cm/hr in all the layers. They are usually extremely hard when dry and they form rather large cracks during the dry season.

A typical profile of the subgroup D1 is described below:

Soil Pit No: 23N - 1



Textural profile formula: V^6

Textural profile symbol: DV

- **Irrigation Potential:** These soils have been considered being highly suitable for sugar cane production and been classified as class 1. Although their hydraulic conductivities are extremely slow, this was not taken into account when replacing these soils into irrigation capability classes. Instead, their limitations and problems were indicated on a "potential problem area" maps. This was done simply to indicate that these areas are highly suitable for irrigated sugar cane but some serious problems are anticipated under prolonged irrigation due to the extremely slow hydraulic conductivity. The main problem is the water table will be raised during the irrigation. Since they are not freely drained, soluble salts will be brought upwards and accumulated in the upper layers, consequently causing salinity or even alkalinity problem within few years after the irrigation was introduced to the area. Therefore a very careful management practices are required when irrigated these lands.

The areas where the clay content is higher than 55 percent but lower than 70 percent were downgraded by one class. The areas where the clay content exceeds 70 percent have been considered non-irrigable, because the very fine textured nature of these lands will present many problems for irrigation, such as drainage, alkalinity and salinity.

- Subgroup D2 (18 acres)

This subgroup consists of textural profiles which are almost entirely comprised of fine and fine-medium textured deposits. Fine textures, mainly clay and sandy clay, occupy at least one horizon and fine-medium textures, mainly sandy clay loam and clay loam, occupy more than three horizons in the textural profile.

These soils are strongly mottled throughout the profile due to the very slow hydraulic conductivities of the deposits. The surface layers are usually dark grayish colored. Lower horizons have a wide variety of colors, raging from dark brown to yellowish brown.

A typical profile of the subgroup D2 is described below:

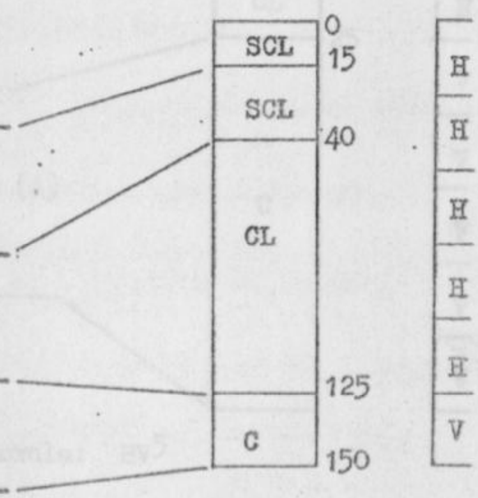
Soil pit No. 3N-2

Color: 10 YR 3/2
Cons : hard (d)
Mottles: distinct

Color: 10 YR 4/3
Cons : hard (d)
Mottles: distinct

Color: 10 YR 4/2
Cons : hard (d)
Mottles: distinct

Color: 10 YR 5/4
Cons : hard (d)
Mottles: prominent



Textural profile formula: H^5V

Textural profile symbol : DHV

- Irrigation Potential: These soils are highly suitable for sugar cane production. They have been classified as class 1 and are among the best soils for sugar cane cultivation. They have a high available water capacity, high C.E.C. and natural fertility. Their hydraulic conductivities are very slow, therefore an adequate drainage system is required. They need careful management as drainage and possible salinity problems are anticipated with prolonged irrigation due to the slow hydraulic conductivities. These soils have a high productivity and a high payment capacity under irrigated sugar cane cultivation.

- <u>Subgroup D3 (100 acres)</u>

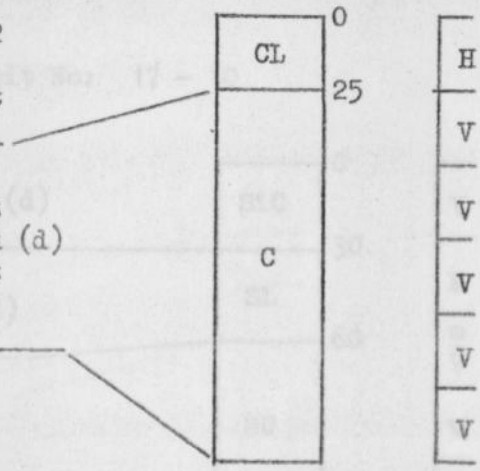
This subgroup is similar to that of subgroup D1 except medium-fine textured deposits cover the surface horizons. Heavy textured deposits usually dominates throughout lower profile. Their color is fairly uniform, ranging from dark grayish brown to dark brown. They are extremely hard when dry and also form large cracks during the dry season. Their hydraulic conductivities are extremely slow, especially in the lower layers. They are generally poorly drained, and strongly mottled throughout the profile.

A typical profile of the subgroup D3 is described below:

Soil pit No: 17N - 15

Color: 10 YR 3/2
Cons.: hard (d)
Mottles: prominent

Color: 10 YR 3/3
Cons.: ext. hard (d)
Mottles: prominent



Textural profile formula: HV^5

Textural profile symbol: DVH

- <u>Irrigation Potential:</u> These soils have been classified as class 1, being highly suitable for an irrigated sugar cane production. Their capabilities, limitations and anticipated problems are exactly the same of these subclass D1.

- Subgroup X1 (1,267 acres)

This subgroup consists of textural profiles in which coarse and coarse-medium textured deposits are interbedded with the medium-fine and fine textured deposits to give no definite sequence. LM and HV textures occupy approximately the same proportion of the textural profile. Coarse-medium textures usually vary from sandy loam to loam which contains less than 20 percent clay. Fine textured material is comprised of textures ranging from sandy clay loam to clay.

The surface horizons have dark grayish colored and strongly mottled. Lower horizons have somewhat lighter colors; ranging from yellowish brown to brownish yellow. These layers are also strongly mottled.

A typical profile of the subgroup X1 is described below:

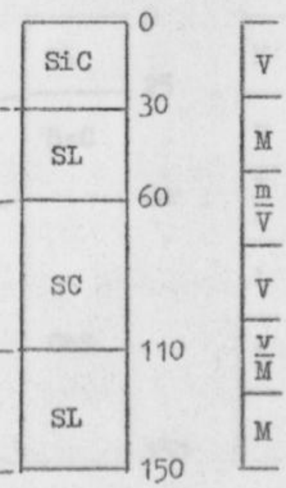
Soil pit No: 17 - 10

Color: 10 YR 2/2
Cons.: ext. hard (d)
Mottles: prominent

Color: 10 YR 3/2
Cons.: S. hard (d)
Mottles: faint

Color: 10 YR 5/4
Cons.: hard (d)
Mottles: prominent

Color: 10 YR 6/6
Cons.: S. hard (d)
Mottles: distinct



Textural profile formula: $VM\frac{m}{V}V\frac{v}{M}M$

Textural profile symbol: X

- Irrigation Potential: These soils have been classified as class 3, being suitable for irrigation, but appraaching marginality due to the random occurrence of coarse textured layers within the profile. These layers are low in available water holding capacity, low in cation exchange capacity and nautral fertility. However, finer textured layers supply enough available water during the growth of the sugar cane. Therefore, this subgroup is believed to have a moderately low productivity and an adequate payment capacity for an irrigated sugar cane production under proper management.

- Subgroup X2 (82 acres)

This subgroup consists of textural profiles in which coarse and coarse-textured deposits are interbedded with the medium-fine and fine textures showing no definite sequences. Coarse textures, which are primarily sands and loamy sands usually occupy more than 3 horizons. These sandy strata may occur at any depth, with a variable thickness, interbedded with textures ranging from sandy clay loam to clay which occupy usually only one horizon.

The surface colors are usually dark gray to dark grayish brown. These horizons are slightly mottled. Lower horizons have a color ranging from dark brown to yellowish brown. Most of these horizons are strongly mottled indicating imperfect to poor drainage characteristics.

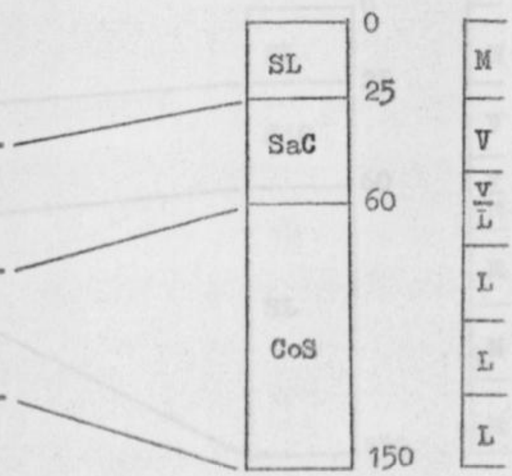
A typical profile of the subgroup X2 is described below:

Soil Pit No: 4N-7

Color: 10 YR 3/1
Cons : S. hard (d)
Mottles: faint

Color: 10 YR 5/4
Cons : hard (d)
Mottles: prominent

Color: 10 YR 5/6
Cons : loose (d)
Mottles: distinct



Textural profile formula: MV $\frac{V}{L}$ L^3
Textural profile symbol : XL

- Irrigation Potential: This subgroup has been classified as class 6, being unsuitable for irrigated sugar cane production due to the extreme limitations in soil characteristics. The main limiting factor is the coarse textured deposits which occupy more than 75 cm depth within the profile. These sandy strata have very low water holding capacity, very low C.E.C. and natural fertility. They have very low productivity and do not have any payment capacity.

- Subgroup X3 (221 acres)

This subgroup consists of textu
medium textures are interbedded
to give no definite sequence.
medium textured deposits with a
loam which has less than 20 per
usually clay or sandy clay and
interbedded with medium texture

The surface layers usually have
grayish brown. Lower layers ha
brown to yellowish brown. They
profile.

A typical profile of the subgro

Soil Pit No:

Color:	10YR 3/3
Cons.:	hard (d)
Mottles:	prominent
Color:	10 YR 3/1
Cons:	hard (d)
Mottles:	faint
Color:	10 YR 4/2
Cons :	friable (m)
Mottles:	distinct

Textural profile formu

Textural profile symbo

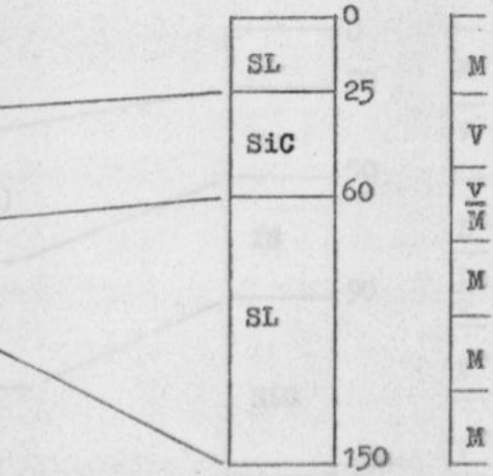
- Irrigation Potential: These so
suitable for irrigated sugar ca
because of limitations in soil
holding capacity, medium C.E.C.
ely coarse textured deposits w
are free of accumulation of har
are therefore believed to be pr
city for sugar cane cultivation

ral profiles in which coarse and coarse- with the fine and fine-medium textures LM textures are generally comprised of texture varying from sandy loam to silt cent clay. Fine textured deposits, approximately 25 cm thick, are found d deposits at any depth.

a color ranging from dark gray to dark ve usually lighter color, ranging from are strongly mottled throughout the

up X3 is described below:

18S-12



las MV $\frac{V}{M}$ M^3

l : XM

ils have been classified as class 3 ne production, but approaching marginality characteristics. They have moderate water and natural fertility due to the modera- hich dominate the textural profile. They aful salts and their E.S.P. is low. They oductive and have moderate payment capa- under proper management.

- Subgroup X5 (165 acres)

This subgroup consists of textural profiles in which coarse and coarse-medium textures are interbedded with fine and fine-medium textures without a definite sequence. Fine and fine-medium textures usually dominate the textural profile, occupying more than three horizons. These layers are comprised of mostly fine textured deposits, mainly silt clay and clay. Medium-coarse and coarse textured deposits occupy one or two horizons and they may occur at any depth with a variable thickness.

These silts usually have dark grayish colored surface horizons, due to the presence of organic matter. The lower horizons are of variable colors, ranging from dark brown to yellowish brown. They are strongly mottled throughout the profile.

A typical profile of the subgroup X5 is described below schematically.

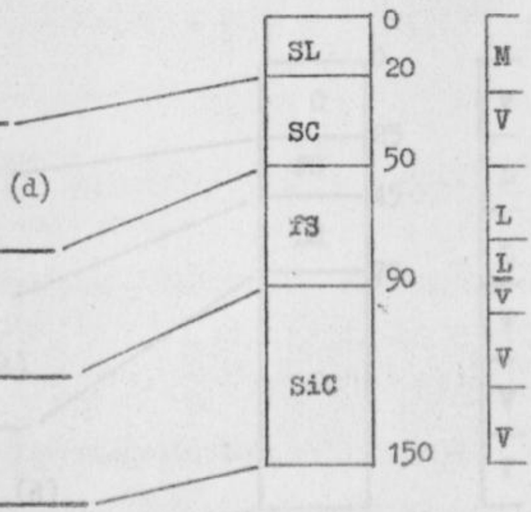
Soil Pit No: 1N-15

Color: 10 YR 3/2
Cons : hard (d)
Mottles: faint

Color: 10 YR 3/3
Cons : ext. hard (d)
Mottles: prominent

Color: 10 YR 5/6
Cons : loose (d)
Mottles: faint

Color: 10 YR 5/4
Cons : hard (d)
Mottles: prominent



Textural profile formula: MVL $\frac{L}{V}$ V^2

Textural profile symbol : XV

- Irrigation Potential: These soils have been classified as class 3, being suitable for sugar cane production, but approaching marginality due to the deficiencies in soil characteristics. Although they may have some coarse textured interbedded layers, their thickness is not very significant and the underlying fine textured deposit provide enough water holding capacity for the entire profile. Thay are moderately productive and have moderate payment capacity under irrigated sugar cane cultivation.

- Subgroup X6 (39 acres)

This subgroup consists of textural profiles which are almost entirely comprised of fine and coarse textured deposits. These deposits, however, are interbedded and do not give any definite sequence. Fine textured deposits, mainly clay and silt clay, dominate the entire textural profile, occupying more than three horizons. Coarse textures, which are mainly composed of loamy sands, occupy at least one horizon. These sandy strata may occur at any depth with a variable thickness, but are generally found between the fine textured deposits.

These soils usually have dark grayish colored surface layers which are slightly mottled. Lower horizons have a wide variety of colors, ranging from yellowish brown to brownish yellow. The intensity and the density of the mottlings usually increases with depth.

A typical profile of the subgroup X6 is described below:

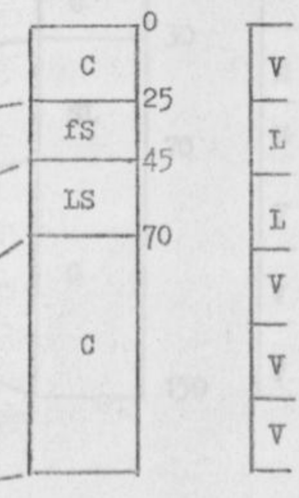
Soil pit No: 1N - 13

Color: 10 YR 4/4
Cons.: hard (d)
Mottles: prominent

Color: 10 YR 5/4
Cons.: loose (d)
Mottles: distinct

Color: 10 YR 5/6
Cons.: S. hard (d)
Mottles: distinct

Color: 10 YR 4/1
Cons.: ext. hard (d)
Mottles: distinct



Textural profile formula: VL^2V^3

Textural Profile symbol: XVL

- Irrigation potential: These soils have been classified as class 3, being suitable for irrigated sugar cane productions but approaching marginality. Their limitations and characteristics are very similar to those of the subgroup X5. They are believed to be moderately productive and have an adequate payment capacity under proper management.

- Subgroup X7 (277 acres)

This subgroup consists of textural profiles which are almost entirely comprised of fine and coarse-medium textured deposits. Fine textures, mainly sandy clay and clay dominate throughout the profile. Medium textures, which are mainly sandy loams and loams, occupy at least one horizon. These textures are interbedded to give no definite sequence. However, coarse-medium textures are usually found between the fine textured materials.

These soils have a dark grayish colored, slightly mottled surface horizons. Lower horizons are strongly mottled and have a color ranging from dark grayish brown to dark brown. They are imperfectly to poorly drained due to the fine textured deposits.

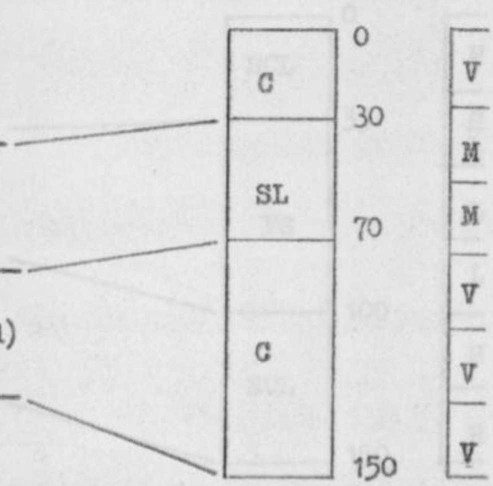
A typical profile of the subgroup X7 is described below:

Soil Pit No: 1N-8

Color: 10 YR 4/1
Cons : hard (d)
Mottles: faint

Color: 10 YR 4/2
Cons : S. hard (d)
Mottles: prominent

Color: 10 YR 3/3
Cons : ext. hard (d)
Mottles: distinct



Textural profile formula: VM^2V^3

Textural profile symbol: XVM

- Irrigation Potential: These soils have been classified as class 2, being moderately suitable for sugar cane production. The main limiting factor is the medium textured deposits interbedded with the fine textures at variable depths. However, the fine textured lower layers provide enough available water during the growth of the sugar cane. Due to the extremely slow hydraulic conductivities of the lower layer, some drainage problems are anticipated during prolonged irrigation. Under proper management, these soils are believed to have a moderate payment capacities and an adequate payment capacity for sugar cane production.

- Subgroup X10 (17 acres)

This subgroup consists of textural profiles which are almost entirely comprised of fine-medium and coarse textured deposits. H textures dominate the profile, occupying more than three horizons. These layers are usually of textures ranging from sandy clay loam to heavy loam which contains more than 20 percent clay. Coarse textured deposits, mainly sands and loamy sands, occur at any depth within the profile with variable thickness. They usually occupy not more than two horizons.

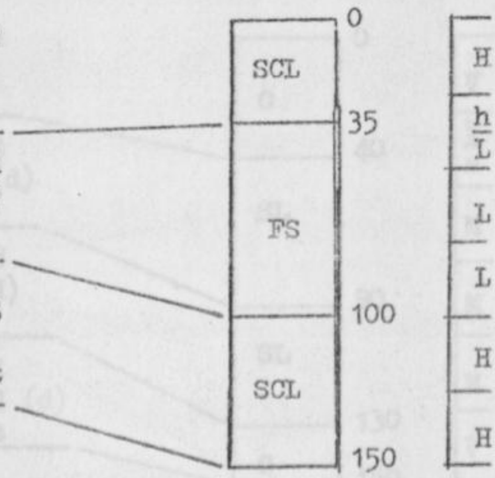
The surface horizons are usually dark, the color ranging from very dark gray to grayish brown. These horizons are slightly mottled. Lower horizons are yellowish brown colored and strongly mottled, indicating the pressure of a high water table within these layers during or right after the rainy season.

A typical profile of the subgroup X10 is described below:

Color: 10 YR 3/1
Cons.: hard (d)
Mottles: faint

Color: 10 YR 4/4
Cons.: loose (d)
Mottles: distinct

Color: 10 YR 4/3
Cons.: hard (d)
Mottles: prominent



Textural profile formula: $H\frac{h}{L}L^2H^2$
Textural profile symbol: XHL

- Irrigation Potential: The irrigation capability of these soils is greatly influenced by the presence of coarse textured material within the textural profile. This layer or layers have very low water holding capacity and low C.E.C. Therefore, in spite of the fine-textured deposits which dominate the profile, these soils have been classified as class 4, being marginally suitable for irrigated sugar cane production. Under proper management practices, they may have an adequate payment capacity.

- Subgroup X11 (306 acres)

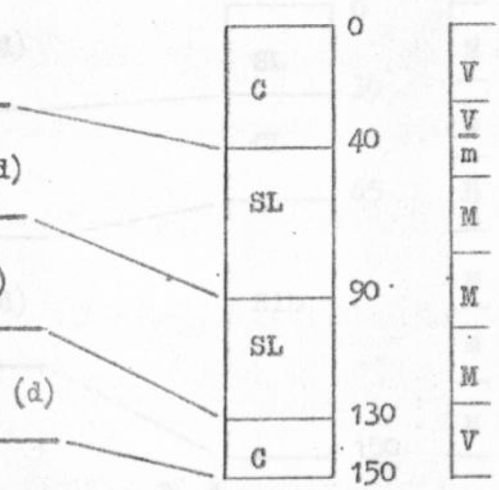
This subgroup consists of textural profiles in which fine textured deposits are interbedded with the coarse-medium deposits. M textures, which are mainly sandy loam and loam, containing less than 20 percent clay, dominate throughout the profile. They occupy more than three horizons within the textural profile. Fine textured deposits, mainly sandy clay and clay, occupy not more than two layers and occur as individual layers within the coarse-medium textured deposits, or underlie them.

They have a dark grayish brown textured, slightly mottled surface horizons. Lower horizons are of yellowish brown colored and they are somewhat strongly mottled.

A typical profile of the subgroup X11 is described below:

Soil pit No. 5S-10

Color:	10 YR 3/2
Cons :	hard (d)
Mottles:	faint
Color:	10 YR 4/3
Cons :	S. hard (d)
Mottles:	faint
Color:	10 YR 5/8
Cons :	S hard (d)
Mottles:	faint
Color:	10 YR 5/4
Cons :	ext. hard (d)
Mottles:	prominent



Textural profile formula: $V \frac{V}{m} M^3 V$
Textural profile symbol : XMV

- Irrigation Potential: This subgroup has been classified as class 3, being suitable for irrigation, but approaching marginality due to the presence of coarse-medium textured deposits. These layers have low water holding capacities, and low C.E.C. However, the fine textured lower layers have an extremely slow permeability and enough available moisture for the sugar cane during the later stage of growth. This subgroup may be fairly productive under proper management and may have an adequate payment capacity.

- Subgroup X12 (37 acres)

This subgroup consists of textural profiles which are almost entirely comprised of coarse-medium and fine-medium textures. Coarse, medium textures, mainly sandy loam and silt loam, occupy more than 25 cm of the textural profile. Fine medium textures, mainly clay loam or sandy clay loam, are found interbedded with the coarse-medium textures, giving no definite sequence. These textures usually occupy less than 50 cm thickness of the profile.

They have dark grayish colored surface horizons which are strongly mottled. This dark color usually continues downward the profile and the lower horizons have a dark brownish color. These soils are strongly mottled throughout the profile, indicating a poor drainage condition.

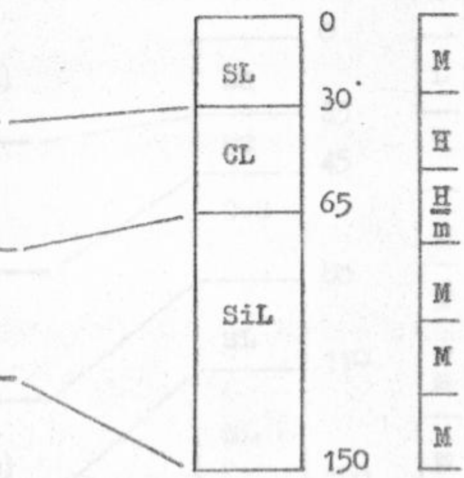
A typical profile of the subgroup X12 is described below schematically:

Soil pit No. 9N-3

Color: 10 YR 3/2
Cons : S. hard (d)
Mottles: prominent

Color: 10 YR 3/1
Cons : hard (d)
Mottles: prominent

Color: 10 YR 3/3
Cons : S. hard (d)
Mottles: prominent



Textural profile formula: $MH\frac{H}{m}M^3$

Textural profile symbol : XMH

- Irrigation Potential: The capability of this subgroup depends upon the clay content of the coarse-medium textured deposits. They are considered as class 2, being moderately suitable for irrigation where they contain 10 to 20 percent clay. When the clay content is lower they are downgraded by one class. They have moderate to low productivity under sugar cane cultivation depending upon the clay content. However, under proper management they are considered fairly well suited for irrigated sugar cane.

- Subgroup X13 (74 acres)

This subgroup consists of textural profiles in which the coarse and coarse-medium textured deposits are interbedded with the fine and fine mèdium deposits without any definite sequence. Medium textures, mainly sandy loams, dominate the textural profile, occupying more than two horizons. Coarse textures, mainly loamy sands and coarse sands occupy at least one horizon. A fine textured layer, usually sandy clay is found within coarse textured layers at various depth with a thickness of not more than 25 cm.

The surface layers are of dark grayish colored and slightly mottled. Lower horizons have a color ranging from dark brown to yellowish brown. The intensity of the mottles usually increases with depth.

A typical profile of the subgroup X13 is described below:

Soil pit No. 6S-15

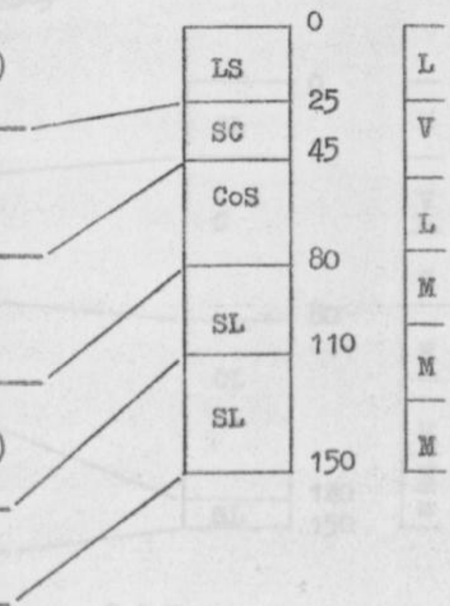
Color: 10 YR 3/2
Cons : S. hard (d)
Mottles: faint

Color: 10 YR 3/4
Cons : hard (d)
Mottles: faint

Color: 10 YR 4/4
Cons : loose (d)
Mottles: faint

Color: 10 YR 3/3
Cons : friable (m)
Mottles: distinct

Color: 10 YR 5/6
Cons : friable
Mottles: distinct



Textural profile formula: $LVLM^3$
Textural profile symbol : XML

- Irrigation Potential: These soils are not suitable for sugar cane due to the sandy textured characteristics of the upper textural profile. Their water holding capacities are low and they have a low C.E.C. and natural fertility. Fine textured layers are too shallow to provide any beneficial effect on sugar cane growth. They have very low productivity and very low payment capacity, not enough to warrant any irrigation for sugar cane production.

- Subgroup X14 (7 acres)

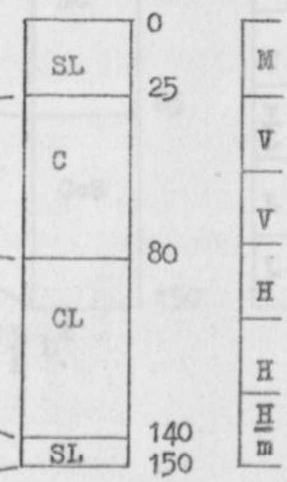
This subgroup consists of profiles in which fine and fine-medium deposits are interbedded with the coarse and coarse-medium deposits to give no definite sequence. Fine and fine-medium textures consist of generally clay loams and clays, which dominate the entire profile. Fine-medium textures occupy more than two layers and fine textures occupy at least one layer in the textural profile. Coarse and coarse-medium textures consist of mainly sandy loams and occupy not more than two horizons.

The surface horizons are usually dark grayish in color due to the organic matter accumulation. These horizons are strongly mottled. Lower layers are of yellowish brown colored and are also strongly mottled. These soils are imperfectly to poorly drained due to the very slow permeabilities of the fine textured layers.

A typical profile of the subgroup X14 is described below:

Soil pit No. 13S-9

Color:	10 YR 3/2
Cons :	hard (d)
Mottles:	prominent
Color:	10 YR 3/3
Cons :	V. hard (d)
Mottles:	faint
Color:	10 YR 5/4
Cons :	firm (m)
Mottles:	prominent
Color:	10 YR 5/6
Cons :	friable (m)
Mottles:	prominent



Textural profile formula: $MV^2H^2\frac{H}{m}$

Textural profile symbol : XHV

- Irrigation Potential: These soils are classified as class 1, being highly suitable for sugar cane production. Although they have a sandy loam textured surface layers, this layer is usually less than 25 cm thick, and does not affect the overall capacity of the subgroup. They have a high productivity and high payment capacity under good management.

- Subgroup X15 (Inc.)

This subgroup consists of textural profiles in which coarse textures dominate. Sandy clay or finer textured deposits are usually found interbedded with the coarse textures. These layers occupy two horizons or less within the textural profile.

The surface layers are generally dark grayish colored and slightly mottled. Lower horizons are of yellowish brown colored and the intensity of the mottles increases with depth. Fine textured deposits are usually extremely hard when dry, and have very slow hydraulic conductivities.

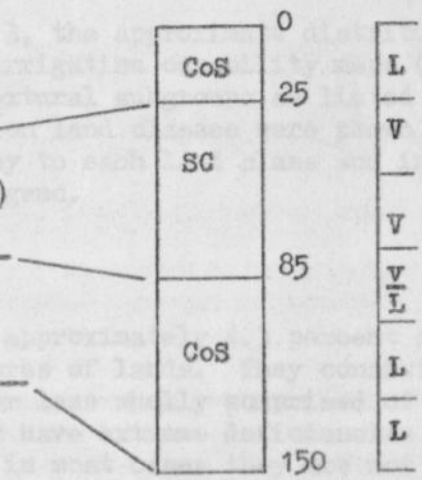
A typical profile of the subgroup X15 is described below:

Soil pit No. 27-8

Color: 10 YR 3/1
Cons : loose (d)
Mottles: faint

Color: 10 YR 4/4
Cons : ext. hard (d)
Mottles: faint

Color: 10 YR 4/6
Cons : loose (d)
Mottles: distinct



Textural profile formula: $LV^2 \frac{V}{L} L^2$

Textural profile symbol: XLV

- Irrigation Potential: These soils are classified as class 4, being marginally suitable for sugar cane due to the coarse textured characteristics of the profile. However fine textured deposits have good available moisture capacity and high C.E.C. It is believed that under good management, they may have an adequate productivity and payment capacity.

PART III

INTERPRETATION OF SOIL FOR SUGAR CANE PRODUCTION

3.1. General.

The estimated acreage of land classes in each textural subgroup is shown in Table 3. The extent of the land in each of the five land classes was determined on the basis of the kinds of soils occurring in each mapping unit. The acreage of each textural subgroups shown in Table 4 also served as a guide in arriving at these estimates.

In addition to the data given in Table 3, the approximate distribution of the various land classes are shown on the irrigation capability maps (Sheets 8, 9, 11 and 12). In making these maps textural subgroups as listed in Table 4 were used as a guide. All the irrigation land classes were shown as single unit throughout the project area. A key to each land class and informative appraisals appear in the descriptive legend.

3.2. Interpretation of Textural Groups.

3.2.1. Group A. This group comprises approximately 4.3 percent of the project area, and cover 548) acres of lands. They consist of textural profiles which are more or less wholly comprised of coarse textured deposits. Therefore they have extreme deficiencies for irrigated sugar cane production, and in most cases they are not suitable for irrigation. Approximately 56.6 percent of the group (310 acres) have been classified as class 3, being suitable for irrigated sugar cane production, but approaching marginality due to the extreme deficiencies in soil characteristics.

Group A soils do not have any accumulation of harmful salts and their E.S.P. is low. However they have very low available water holding capacities and cation exchange capacities. Approximately 43.4 percent of the group (238 acres) have been classified as class 6, not being suitable for sugar cane production.

3.2.2. Group B. This group covers approximately 1,337 acres of lands (10.4 percent) within the project area. They consist of textural profiles in which medium and coarse textured deposits overlie fine textured deposits with a variable thickness. Therefore, their suitability for an irrigated sugar cane cultivation depends largely upon the thickness of the top layers. However, since the top soil is the most important layer from the point of view of the plant growth, medium and coarse textured nature of the topsoil of this group greatly influences their capabilities. However, all the lands included in this group has been considered irrigable with a variable degree of suitability for sugar cane. Approximately 91.4 percent of this group (1,222 acres) has been classified as class 3 being suitable but close to marginality due to the extreme deficiencies of the topsoil. Where the coarse textured layers are deeper than 75 cm, they are classified as class 4, being marginally suitable for sugar cane. These lands cover some 115 acres and comprise 8.6 percent of this group.

The Group B soils do not have any alkalinity and salinity problems as they have low E.C. and E.S.P. However, the main limiting factor seems to be the coarse and medium textures which result in low moisture supply capacity, low cation exchange capacity and some micro-biological hazards for sugar cane, such as nematodes.

3.2.3. Group C. This group comprises approximately 8.0 percent of the project area, covering some 1,017 acres of land. It consists of textural profiles in which fine textured deposits overlie the coarse textured deposits with variable thickness. Therefore the thickness of the fine textured top soils has prime importance in categorizing these soils into irrigation land classes. All the soils included in this group have been considered as suitable for sugar cane cultivation with a variable degree of suitability for irrigation. Where the fine textured layers are deeper than 100 cm, they are classified as class 1, being highly suitable for sugar cane. These lands cover some 733 acres and comprise 79.4 percent of the group. Practically these soils should not have any limitation for irrigation. However, the fine textured topsoils generally have an extremely slow permeability. Although this was not taken into account in placing the soils into class 1; as explained in Section 1.6, they are considered as being potential problem areas. It is expected that under continuous irrigation, some drainage problems will arise, as they have no drainage ability in spite of the medium textured lower horizons. Approximately 207 acres of lands (12.3 percent) within this group has been classified as class 2, being moderately suitable for sugar cane. In these lands sandy strata or medium textured substrata occur closer to the surface than in class 1 lands, which is found between 50 - 100 cm depth. Where the fine textured topsoil is shallower than 50 cm, they are classified as class 3, being suitable but closer to the marginality because of the extreme deficiencies of the coarse textured thick subsoil.

3.2.4. Group D. This group comprises approximately 43.3 percent of the project area, covering some 5,546 acres of lands. They consist of textural profiles which are almost entirely comprised of fine textures. Their suitability for sugar cane depends upon the clay content. The soils having less than 55 percent clay are classified as class 1, being highly suitable for sugar cane. These lands cover some 4,271 acres (77.0 percent) within this group. However, they have the same present and anticipated problems as explained for group C due to the extremely slow hydraulic conductivities. The soils with a clay content between 55 and 70 percent are classified as class 2. In addition lands having depressional topography are also put into class 2. These lands comprise approximately 3.3 percent of the group, covering some 185 acres of land.

Approximately 19.7 percent of this group (1,090 acres) is comprised of soils having more than 70 percent clay content. These very fine textured soils present extreme drainage problems and anticipated alkalinity problems related to impeded drainage. They are considered non-irrigable.

Although the soils included in this group have an E.S.P. within specified limits, they need very careful management because of the slow hydraulic conductivities, which may cause alkalinity problems under continuous irrigation. They have high available moisture supply, high C.E.C. and high natural fertility. Besides the drainage characteristics, they are excellent soils for sugar cane.

3.2.5. Group X. This group comprises approximately 19.7 percent of the project area, covering some 2,518 acres of lands. They consist of textural profiles in which fine and medium and/or coarse textured deposits are interbedded to give no definite sequence. Therefore their capabilities for sugar cane largely depend upon the nature of the textural profile and the thickness of the sandy strata, which may occur at any depth within the profile with a variable thickness. This group presents a wide range of capability classes ranging from class 1 to class 6. Approximately 96.7 percent of the group (2,436 acres) has been considered suitable for sugar cane cultivation with a variable degree of suitability for irrigation. Only 7 acres of lands (0.3 percent) has been found highly suitable for sugar cane and have been classified as class 1. Approximately 468 acres of land (18.6 percent) has modetate limitations for the sugar cane, mainly due to the thick medium and coarse textured deposits within the profile. These soils have been classified as class 2. Most of this group is approaching marginality for irrigation due to the presence of coarse textured deposits throughout the textural profile. These soils cover some 1,469 acres of lands (58.3 percent). Approximately 19.5 percent of the group X (492 acres) has been considered marginal for an irrigated sugar cane production because of the extreme deficiencies in soil characteristics, mainly due to the coarse textures.

Approximately 3.3 percent of the group (82 acres) is not suitable for irrigation, because the sandy strata are thicker than 100 cm. Although some fine and medium textured deposits are interbedded with the sandy textures, they are too shallow to contribute any beneficial effects on the sugar cane growth.

All the soils included in group X have low E.S.P. and low electrical conductivity. They need careful management either for the water budget on the medium and coarse textured soils, or for the drainage on the lands where the fine textured deposits are dominating.

Table 3 - Estimated Acreage and Percentage of Land Classes in each Irrigation Land Class by Textural Groups:

		Textural Groups										Total Area	
		Group A		Group B		Group C		Group D		Group X			
		Acr.	%	Acr.	%	Acr.	%	Acr.	%	Acr.	%	Acr.	%
Irrigable	Class 1	-	-	-	-	733	79.4	4271	77.0	7	0.3	5011	39.2
	Class 2	-	-	-	-	207	12.3	185	3.3	468	18.6	860	6.7
	Class 3	310	56.6	1222	91.4	77	8.3	-	-	1469	58.3	3078	24.1
	Class 4	-	-	115	8.6	-	-	-	-	492	19.5	607	4.7
Total Irrigable		310	56.6	1337	100.0	1017	100.0	4456	80.3	2436	96.7	9556	74.7
Non-Irrig.	Class 6	238	43.4	-	-	-	-	1090	19.7	82	3.3	1410	11.0
	Swamp	-	-	-	-	-	-	-	-	-	-	1831	14.3
Total Non Irrig.		238	43.4	-	-	-	-	1090	19.7	82	3.3	3241	25.3
Total Area		548	100.0	1337	100.0	1017	100.0	5546	100.0	2518	100.0	12797	100.0

Table … Acr…
Textural …

Textural Subgroup	Irr. Cap. Class	Acr.	%
A1	6	80	0.6
A1b	6	12	0.1
A2	6	74	0.6
A3	3	83	0.6
A4	6	72	0.6
A5	3	227	1.8
B1	3	87	0.7
B3	3(2)	741	5.8
B4	3(2)	7	0.1
B5	3(2)	12	0.1
B6	4	73	0.6
B7	3	242	1.9
B8	4	42	0.3
B9	3	133	1.0
C1	2	100	0.8
C2	3	70	0.5
C3	2	93	0.7
C4	3	7	0.1
C5	2	14	0.1
C7	1	700	5.5
C9	1	33	0.2
D1	1	3071	24.0
D1a	2	21	0.2
D1b	2	164	1.3
D1h	6	1073	8.4
D1ha	6	17	0.1
D1w	1	1082	8.4
D2	1	18	0.1
D3	1	100	0.8
X1	3	860	6.7
X1b	4	407	3.2
X2	6	82	0.6
X3	3	221	1.7
X5	2	165	1.3
X6	3	39	0.3
X7	2	277	2.2
X8	2	26	0.2
X10	3	17	0.1
X11	3	295	2.3
X11a	4	11	0.1
X12	3	37	0.3
X13	4	74	0.6
X14	1	7	0.1
Swamp	–	1831	14.3
Total:		12797	100.0

PART IV

SPECIAL PROBLEMS AND CONCLUSIONS

1. The project area has been found to be highly suitable for a large-scale irrigated sugar cane development

2. Out of the 12,797 acres of lands surveyed, 9,556 acres have been found suitable for irrigated sugar cane production. Approximately 5,011 acres of lands are highly suitable, 860 acres of lands moderately suitable, 3,078 acres of lands suitable but closer to marginality and 607 acres of lands martinally suitable for sugar cane.

3. Approximately 1,410 acres of lands are not suitable due to the undesirable soil characteristics. Permanent lakes and swamps cover some 1,831 acres.

4. Approximately 1,090 acres of lands contain more than 70 percent clay. These lands should not be irrigated as they are practically impermeable. They are extremely hard when dry and will present severe problems for tillage. In addition some salinity and alkalinity problems may arise which will be impossible to correct because of the impeded drainage.

5. Hydraulic conductivities of the fine textured soils are usually slower than 0.1 cm/hr. Therefore if an adequate drainage system is not provided, it is expected that these lands will develop some drainage and alkalinity problems.

6. Analytical results showed that the electrical conductivities and E.S.P. values of the levee soils are below the specified limits. However, the water table, which is fairly deep at present, will be raised by the continuous irrigation, and the soluble salts will be brought to the layers closer to the surface. Therefore necessary measures should be taken to keep the water table level below the rooting zone of the sugar cane.

7. Although the topography does not present any problem as almost entire project area has less than 2 percent slope, the micro-relief is very uneven especially in the areas where the clay content is high. These lands tend to develop a "micro gilgai" relief which is extremely uneven surface topographically over very short distances, the relief is usually less than 50 cm. In addition these soils are extremely hard when dry, and the land levelling will be very difficult even with heavy machinery.

8. The lands in the northern part of the project area, close to the highway, are fairly high lying lands and have a gently undulating topography with a slope more than 2 percent. Although the soil characteristics are suitable for sugar cane growth, the cost of irrigation water will be high as a long irrigation canal is required, due to the differences in elevation from the low lying lands. Therefore their development could be postponed until future irrigation studies are completed.

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3. Approximately 1,410 acres of lands are not suitable due to the undesirable soil characteristics. Permanent lakes and swamps cover some 1,831 acres.

4. Approximately 1,090 acres of lands contain more than 70 percent clay. These lands should not be irrigated as they are practically impermeable. They are extremely hard when dry and will present severe problems for tillage. In addition some salinity and alkalinity problems may arise which will be impossible to correct because of the impeded drainage.

5. Hydraulic conductivities of the fine textured soils are usually slower than 0.1 cm/hr. Therefore if an adequate drainage system is not provided, it is expected that these lands will develop some drainage and alkalinity problems.

6. Analytical results showed that the electrical conductivities and E.S.P. values of the levee soils are below the specified limits. However, the water table, which is fairly deep at present, will be raised by the continuous irrigation, and the soluble salts will be brought to the layers closer to the surface. Therefore necessary measures should be taken to keep the water table level below the rooting zone of the sugar cane.

7. Although the topography does not present any problem as almost entire project area has less than 2 percent slope, the micro-relief is very uneven especially in the areas where the clay content is high. These lands tend to develop a "micro gilgai" relief which is extremely uneven surface topographically over very short distances, the relief is usually less than 50 cm. In addition these soils are extremely hard when dry, and the land levelling will be very difficult even with heavy machinery.

8. The lands in the northern part of the project area, close to the highway, are fairly high lying lands and have a gently undulating topography with a slope more than 2 percent. Although the soil characteristics are suitable for sugar cane growth, the cost of irrigation water will be high as a long irrigation canal is required, due to the differences in elevation from the low lying lands. Therefore their development could be postponed until future irrigation studies are completed.

APPENDIX I

METHODS OF ANALYSIS AND STANDARDS TO CLASSIFY ANALYTICAL RESULTS.

1. METHODS OF ANALYSIS

1.1. Texture: was determined by hydrometer method (4). Organic matter was destructed with 30 percent Hydrogen peroxide; the sample was dispersed with sodium hexameta phosphate solution. Readings were made with a standard hydrometer, ASTM No. 152 H, with Bouyoucos scale in grams per liter (5). Percent sand was found at 40 seconds hydrometer reading, percent clay at 2 hour reading, and percent silt by difference (6).

1.2. Moisture equivalent: was calculated from percent sand, silt and clay as follows (1)

M.E. = (0.027 x % sand) + (0.187 x % silt) + (0.555 x % clay).

1.3. Field capacity ($\frac{1}{3}$ Atm): Moisture equivalent, as calculated above, approximates field capacity. However it can also be calculated as follows (8):

F.C. = (0.904 x M.E.) + 1.3.

1.4. Wilting point (15 Atm): was calculated from moisture equivalent with the following formula (8):

P.W.P. = (0.473 x M.E.) - 1.22.

1.5. Saturation percent: Saturated soil paste was prepared by adding distilled water to the known amount of soil and stirring with a spatula; saturation percentage was calculated from the amount of water used (7).

1.6. Hydraulic conductivity: was determined with the hydraulic conductivity cups under constant head of 2:1 (1). Permeability was calculated by the use of Darcy's equation, where:

$$P = \frac{Q}{At} \cdot \frac{L}{h}$$

P = Permeability in cm/hour.
Q = Volume of water passed through the soil in ml,
A = Cross-sectional area in cm.
t = time in hours.
L = Length of soil column in cm.
h = height of water level above base of soil column.

1.7. Electrical Conductivity: Saturation extracts were prepared using soil solution ration 1:2.5. The conductivity of the extract was then determined by a wheatstone bridge and conductivity cell with the cell constant 1.0 (7).

1.8. Soil reaction:

1.8.1. pH in water: was determined in soil suspension with the soil solution ratio 1:2.5. pH of the Suspension was measured with pH meter with a glass electrode (7).

1.8.2. pH in 1N KCL: was determined as above, except 1N KCL was used instead of distilled water (7).

1.9. Exchangeable Cations: was extracted by 1N neutral ammonium acetate solution (6, 9). Calcium, magnesium, sodium and potassium were determined by atomic absorption spectrophotometer (6).

1.10. Cation Exchange Capacity: was determined by ammonium acetate leaching with the leaching tubes. Adsorbes ammonia was displaced with 10 percent NaCl solution and then distilled according to the semi-micro kjeldahl procedure (9, 6).

1.11. Derived Values:

1.11.1 Percent Base Saturation: was calculated by dividing the sum of ammonium acetate - extracted bases by C.E.C. (7).

1.11.2 Sodium adsorption ratio: was calculated by the following equation (7):

$$SAR = \frac{Na}{\sqrt{\frac{Ca + Mg}{2}}}$$

1.11.3. Sodium Saturation (E.S.P): was calculated by dividing the exchangeable sodium by C.E.C. (7).

2. STANDARDS TO CLASSIFY ANALYTICAL RESULTS.

2.1. Texture:

a - Coarse: sand, loamy sand, sandy loam.
b - Medium: loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam.
c - Fine: sandy clay, silty clay, clay.

2.2. Hydraulic Conductivity:

a - very slow: less than 0.125 cm/hr.
b - slow: 0.125 - 0.50 cm/hr.
c - mod. slow: 0.50 - 2.00 cm/hr.

d - moderate: 2.00 - 6.25 cm/hr.
e - mod. rapid: 6.25 - 12.50 cm/hr.
f - rapid: 12.50 - 25.00 cm/hr.
g - very rapid: more than 25.00 cm/hr.

2.3. pH

a - very acid: 4.5 or less.
b - Acid: 4.6 - 5.5
c - Slightly acid: 5.6 - 6.4
d - Neutral: 6.5 - 7.2.
e - Slightly alkaline: 7.3 - 8.0
f - Alakline: 8.1 - 8.5

2.4. Electrical conductivity.

a - free: 0 - 2 mmhos/cm
b - very slightly affected: 2 - 4 mmhos/cm
c - slightly affected: 4 - 8 mmhos/cm
d - moderately affected: 8 - 16 mmhos/cm
e - strongly affected: 16 + mmhos/cm.

2.5. Exchangeable cations.

2.5.1. Calcium

a - low: 0 - 3.2 meq/100g
b - medium: 3.2 - 6.4 meq/100g
c - high: 6.5+ meq/100g.

2.5.2. Magnesium

a - low: 0 - 0.8 meq/100gg
b - medium: 0.9 - 1.5 meq/100g
c - high: 1.7 + meq/100g.

2.5.3. Potassium

a - low: 0 - 0.5 meq/100g
b - medium: 0.6 - 1.0 meq/100g.
c - high: 1.0+ meq/100g.

2.6. Cation Exchange Capacity.

a - very low: 0.- 5 meq/100g
b - low: 5 - 15 meq/100g
c - medium: 15 - 30 meq/100g
d - high: 30+ meq/100g.

2.7. Derived Values:

2.7.1. Sodium Absorption Ratio (S.A.R.)

a - low:	0 - 5
b - medium:	6 - 10
c - high:	11 - 18
d - very high:	18 +

2.7.2. Exchangeable Sodium Percentage (E.S.P.)

a - very low:	0 - 5
b - low:	6 - 10
c - medium:	10 - 15
d - high:	15 +

APPENDIX II

PHYSICAL AND CHEMICAL ANALYSIS

of

SELECTED SAMPLES

Soil Series : ....

Soil Pit Nº : 1N-2 (A, B, C, D)

Soil Association : ....

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6001		31	32	37	CL	27	26	12	46	0.9	5.3	4.5	0.090				
6002		43	30	27	CL	21	20	9	46	0.8	5.4	4.3	0.048				
6003		53	32	15	SL	16	16	6	42	2.8	6.2	4.5	0.035				
6004		27	34	39	CL	29	28	12	49	0.0	6.1	5.1	0.070				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6001			18.1	15.6	1.5	0.6	35.8		48.2					74	0.4	3					
6002			7.2	8.8	1.7	0.4	18.1		29.5					61	0.6	6					
6003			4.4	4.2	1.6	0.3	10.5		13.7					77	0.8	12					
6004			11.9	10.3	2.7	0.6	25.5		36.6					70	0.8	7					

Soil Series : .... Soil Association : ....

Soil Pit Nº : IN-6 (A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6005		23	38	39	CL	29	28	12	38	0.0	7.2	5.5	0.065				
6006		15	26	59	C	33	31	14	69	0.0	6.4	4.7	0.058				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6005			16.3	14.4	2.0	0.5	33.2		37.5					88	0.5	5					
6006			19.1	18.5	2.5	0.6	40.7		49.1					83	0.6	5					

Soil Series : .... Soil Association : ....

Soil Pit Nº : IN-12 (A,B,C) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6007		53	22	23	SCL	18	18	7	32	0.8	5.5	4.0	0.024				
6008		49	31	20	L	18	18	7	37	0.0	6.0	4.4	0.050				
6009		30	29	41	C	30	28	13	51	0.0	7.4	5.7	0.090				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6007			7.2	7.4	0.8	0.4	15.8		18.6					85	0.3	4					
6008			5.9	5.7	1.1	0.3	13.0		15.4					84	0.5	7					
6009			16.3	15.6	2.7	0.5	35.1		36.6					96	0.7	7					

Soil Series : .... Soil Association : ....

Soil Pit Nº : IN-20 (A,B) .... Location: NUMAN ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10³ mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6010		20	19	61	C	38	36	17	54	0.0	7.9	6.1	0.140				
6011		29	15	65	C	39	37	17	64	0.0	6.2	4.8	0.180				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6010			18.1	21.6	4.3	0.7	44.7		47.0					95	1.0	10					
6011			26.3	20.6	4.0	0.7	51.6		56.2					92	0.8	7					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 1N-25 (A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H_2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6012		14	11	75	C	44	41	20	85	0.0	7.7	6.2	0.215				
6013		15	6	79	C	45	42	20	95	0.0	5.5	4.5	0.320				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6012			22.2	20.3	1.9	1.1	45.5		49.7					91	0.4	4					
6013			28.1	21.7	7.2	0.8	57.8		67.7					85	1.4	11					

Soil Series : ....

Soil Association : ....

Soil Pit Nº : 2N-4 (A, B, C)

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6014		75	12	13	SL	11	11	4	34	0.7	8.0	6.5	0.028				
6015		77	11	12	SL	11	11	4	34	0.0	6.1	4.6	0.034				
6016		25	20	55	C	35	33	15	70	0.0	6.7	4.8	0.190				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6014			5.0	3.7	0.9	0.3	9.9		10.8					92	0.4	8					
6015			6.6	5.5	1.4	0.5	14.0		15.1					92	0.6	9					
6016			19.7	16.0	1.0	0.8	37.5		43.7					86	0.2	2					

Soil Series : .... • Soil Association : ....

Soil Pit Nº : 2N-8 (A,B,C) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6017		25	20	55	C	35	33	15	60	0.0	7.8	6.0	0.039				
6018		19	18	63	C	39	37	17	65	0.0	6.0	4.6	0.035				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g →								← mg / 100 →			ppm
6017			19.1	18.8	1.8	0.8	40.5		44.6					91	0.4	4					
6018			22.2	13.6	2.0	0.8	38.6		46.2					83	0.5	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 2N-14 (A,B) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6019		27	30	43	C	30	28	13	46	0.0	5.7	4.3	0.064				
6020		27	20	53	C	34	32	15	54	0.0	5.8	4.5	0.074				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g			→					← mg / 100		→	ppm
6019			19.1	16.7	1.0	0.7	37.5		43.7					86	0.2	2					
6020			22.2	15.7	2.5	0.6	41.0		46.4					88	0.6	5					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 2N–20 (A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6021		19	10	71	C	42	39	19	71	0.0	5.6	4.2	0.042				
6022		13	10	77	C	45	42	20	85	0.0	5.9	4.7	0.044				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6021			24.5	20.0	1.5	0.7	46.7		59.7					78	0.3	3					
6022			30.5	23.0	2.8	0.9	57.2		74.6					77	0.5	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ..... 3N-2 (A, B, C, D) .... Location: .... NUMAN ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6023A		58	20	22	SCL	18	18	7	36	0.8	6.0	4.5	0.036				
6024A		45	30	25	SCL	19	18	7	34	0.8	6.2	4.5	0.032				
6025A		34	29	37	CL	27	26	12	42	0.0	6.7	5.2	0.068				
6026A		34	31	35	CL/C	25	24	11	44	0.0	7.5	5.8	0.124				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	←	meq / 100g		→					←	mg / 100g	→	ppm
6023A			8.3	6.6	0.1	0.3	15.3		17.7					86	–	1					
6024A			8.3	8.0	0.7	0.2	17.2		18.6					92	0.2	4					
6025A			16.9	11.6	1.4	0.3	30.2		36.6					83	0.4	4					
6026A			17.8	11.5	1.4	0.4	31.1		33.1					94	0.4	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 3S-3 (A, B, C, D, E) .... Location : NUMAN ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC X 10³ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6023		55	19	26	SCL	19	18	7	41	1.0	6.5	5.3	0.062				
6024		60	26	14	SL	14	14	5	38	1.7	6.2	5.2	0.050				
6025		81	14	5	LS	8	9	3	21	2.8	6.8	5.0	0.019				
6026		67	16	17	SL	14	14	5	36	1.7	6.1	4.6	0.026				
6027		43	38	19	SL	19	18	7	38	1.7	6.5	4.8	0.032				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6023			13.3	7.6	tr	0.4	21.3		23.1					92	–	–					
6024			5.8	3.5	0.1	0.2	9.6		11.9					81	–	1					
6025			2.8	1.6	tr	0.1	4.5		5.4					83	–	–					
6026			12.0	9.4	0.6	0.3	22.3		25.3					88	0.1	2					
6027			9.5	7.4	0.6	0.2	17.7		21.5					82	0.2	3					

Soil Series : ....

Soil Pit Nº : 4N-4 (A,B,C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6028		61	18	21	SCL	15	15	6.	34	1.7	5.8	5.0	0.140				
6029		91	3	6	S	6	7	2	12	4.8	6.8	5.2	0.032				
6030		59	21	20	SCL	17	17	7	39	1.4	6.2	4.6	0.025				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6028			11.4	6.4	tr	0.5	18.3		23.1					79	-	-					
6029			3.8	3.3	1.5	0.1	8.7		9.4					92	0.8	15					
6030			9.7	6.6	0.8	0.3	17.4		22.4					78	0.3	4					

Soil Series : ....

Soil Pit Nº : 4N-8 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6031		65	15	20	SCL	16	16	6	38	2.7	6.2	5.2	0.020				
6032		88	4	8	LS	6	7	2	29	6.6	6.0	5.5	0.021				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6031			13.3	11.6	tr	0.1	25.0		35.4					71	–	–					
6032			2.8	1.4	tr	tr	4.2		5.3					79	–	–					

Soil Series : .... Soil Association : ...... NUMAN

Soil Pit Nº : ..4S-5 (A,B,C,D,E)...... Location: ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6033		40	25	35	CL	25	24	11	51	0.0	5.7	5.0	0.180				
6034		90	3	7	S	7	8	2	37	7.3	5.7	4.5	0.023				
6035		94	2	4	S	5	6	1	35	8.6	5.9	4.6	0.010				
6036		48	17	35	SC	24	23	10	42	1.8	5.7	4.3	0.019				
6037		6θ	13	27	SCL	19	18	7	45	0.8	5.9	4.2	0.035				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available: CaO	MgO
	←		meq / 100g					→		← meq / 100g →								— mg / l	
6033			26.9	12.7	tr	0.9	40.5		51.7					78	–	–			
6034			10.0	2.7	0.8	0.4	13.9		19.0					73	0.3	4			
6035			3.8	2.3	0.4	0.2	6.7		10.6					63	0.2	4			
6036			15.5	13.9	tr	0.2	29.6		39.4					75	–	–			
6037			10.0	8.8	tr	0.3	19.1		27.8					69	–	–			

Soil Series : .... Soil Association : ....

Soil Pit Nº : 5N-3 (A,B,C,D,E) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10³ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O.M. %
6192		49	26	25	SCL	20	19	8	43	0.0	5.9	4.8	0.096				
6193		41	30	29	CL	23	22	10	48	0.0	6.5	5.1	0.078				
6194		83	8	9	LS	9	9	3	36	2.2	7.2	5.4	0.045				
6195		57	30	13	L	14	14	5	38	0.0	7.2	5.3	0.056				
6196		91	2	7	S	7	8	2	38	4.2	7.1	5.4	0.056				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C.E.C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←	meq / 100g							→	←	meq / 100g		→					←	mg / 100	→	ppm
6192			9.7	6.7	tr	0.4	16.8		21.6					78	–	–					
6193			12.2	9.1	2.6	0.4	24.3		27.8					87	0.6	9					
6194			5.0	2.3	2.7	0.4	10.4		11.8					88	1.0	23					
6195			7.2	2.5	2.0	0.3	12.0		14.1					85	0.6	14					
6196			5.0	1.7	3.0	0.1	9.8		10.7					92	1.2	28					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ..... 5N-7 (I-II) ..... Location : ..... NUMAN .....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6197		37	22	41	C	28	27	12	47	0.0	6.0	4.6	0.076				
6198		35	32	33	CL	25	24	11	45	0.0	6.5	4.7	0.062				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g			→					← mg / 100		→	ppm
6197			19.1	16.1	0.2	0.4	35.8		39.5					91	–	1					
6198			12.8	11.9	0.5	0.3	25.5		34.1					75	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : . . 5s - 10(A, B, C, D) . . . . Location : . . . . Numan . . . .

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6205	13	25	32	43	C	31	29	13	40	0.0	6.3	4.6	0.064				
6206	14	62	22	16	SL	8	9	3	42	0.7	6.5	4.6	0.039				
6207	15	65	22	13	SL	13	13	5	38	0.7	6.7	4.6	0.038				
6208	16	21	26	53	C	35	33	15	57	0.0	6.8	5.2	0.0150				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6205			19.1	4.7	tr	0.2	34.0		38.4					88	-	-					
6206			8.1	4.1	2.5	0.1	14.8		17.5					85	1.0	14					
6207			5.9	8.1	4.2	0.5	18.7		23.9					78	1.6	18					
6208			28.8	18.3	7.2	0.7	55.0		58.0					94	1.5	12					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ....5S 14-1 (1,2,3,4).......... Location : ....Numan..........

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6407		24	44	32	CL	27	26	12	46	0.0	6.1	4.9	0.190				
6408		24	34	42	C	30	28	13	50	0.0	6.5	4.9	0.072				
6409		44	38	18	L	18	18	·7	38	1.2	6.8	4.9	0.070				
6410		26	42	32	CL	26	25	11	42	0.0	6.9	5.0	0.098				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E. C. P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6407			16.9	11.5	-	0.5	28.9		39.7					73	-	-					
6408			16.9	15.6	0.2	0.5	33.2		38.1					87	0.1	1					
6409			7.5	7.8	0.1	0.2	15.6		19.6					80	0.0	1					
6410		-	13.2	12.4	0.5	0.3	26.4		32.9					80	0.1	2					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 6N-4 (A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6038		39	23	38	CL	26	25	11	44	0.5	5.5	4.6	0.046				
6039		90	2	8	S	7	8	2	32	7.5	7.1	5.1	0.050				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6038			13.3	12.2	1.0	0.3	26.8		33.1					81	0.3	3					
6039			11.4	4.3	1.2	0.3	17.2		18.7					92	0.4	6					

Soil Series : ....

Soil Pit Nº : 6N-6 (A, B, C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (12.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6040		48	30	24	L	20	19	8	42	0.6	5.4	4.3	0.040				
6041		66	19	15	SL	14	14	5	39	5.8	6.1	5.1	0.064				
6042		28	27	45	C	31	29	13	49	0.0	6.8	5.2	0.112				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g			→					← mg / 100		→	ppm
6040			16.1	10.6	1.2	0.4	28.3		36.0					78	0.3	3					
6041			3.4	2.2	tr	0.1	5.7		7.4					77	–	–					
6042			18.6	12.7	3.4	0.4	35.1		41.1					85	0.9	8					

Soil Series : ....

Soil Pit Nº : 6S-4 (A,B,C,D,E)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (12.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6043		36	33	31	CL	24	23	10	41	0.0	5.7	4.5	0.039				
6044		30	31	39	CL	28	27	12	46	0.0	6.2	4.4	0.035				
6045		36	37	27	L	23	22	10	46	0.0	5.8	4.5	0.039				
6046		30	33	37	CL	28	27	12	52	0.0	7.6	6.0	0.078				
6047		36	43	21	L	21	20	9	36	0.0	8.3	6.6	0.059				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6043			16.9	9.7	0.2	0.4	27.2		31.1					87	0.1	1					
6044			18.1	10.3	1.0	0.4	29.8		34.6					86	0.3	3					
6045			12.8	8.4	1.2	0.4	22.8		26.1					87	0.4	5					
6046			17.2	11.8	2.7	0.5	32.2		35.7					90	0.7	8					
6047			11.4	7.4	1.6	0.3	20.7		25.1					82	0.5	6					

Soil Series : ....

Soil Pit Nº : 65–12 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6048		52	26	22	SCL	18	18	7	46	0.8	6.7	6.0	0.086				
6049		56	21	23	SCL	18	18	7	42	1.0	6.5	5.5	0.106				
6050		47	34	19	L	18	18	7	43	1.0	6.5	5.4	0.112				
6051		27	50	23	SiL	23	22	10	57	0.9	5.9	5.0	0.155				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←			meq / 100g					→	←	meq / 100g		→					←	mg / 100	→	ppm
6048			16.9	7.4	tr	0.4	24.7		34.1					72	–	–					
6049			11.4	6.2	0.1	0.5	18.2		21.4					85	–	–					
6050			9.5	5.8	tr	0.4	15.7		19.5					80	–	–					
6051			20.0	11.8	0.2	0.5	32.5		36.2					90	0.1	1					

Soil Series : ....

Soil Pit Nº : 6S 17(1,2,3,4)

Soil Association : ....

Location : Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10³ mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6411		38	34	28	CL	23	22	10	43	0.0	6.2	4.9	0.124				
6412		54	24	22	SCL	18	18	7	37	1.8	6.9	4.8	0.050				
6413		60	22	18	SL	16	16	6	33	1.4	7.0	5.0	0.060				
6414		48	38	14	L	16	16	6	36	0.0	7.0	5.3	0.080				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6411			14.1	10.3	0.1	0.5	25.0		25.9					97	-	-					
6412			7.5	6.2	0.2	0.3	14.2		15.9					89	0.1	1					
6413			6.3	5.6	0.3	0.1	12.3		12.5					98	0.1	2					
6414			16.9	5.2	0.7	0.2	23.0		25.1					92	0.2	3					

Soil Series : ....

Soil Pit Nº : 7N-4 (A, B, C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6052		23	50	27	SCL	25	24	11	57	0.9	5.3	4.2	0.061				
6053		23	50	27	SCL	25	24	11	56	0.8	6.1	4.9	0.076				
6054		23	20	57	C	36	34	16	46	0.0	6.0	4.6	0.096				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6052			16.9	14.3	0.4	0.4	32.0		36.4					88	0.1	1					
6053			20.6	15.2	1.5	0.6	37.9		41.4					91	0.4	4					
6054			24.7	16.1	2.3	0.5	43.6		49.1					88	0.5	5					

Soil Series : ....

Soil Pit Nº : 7N-6 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6055		33	30	37	CL	27	26	12	50	1.0	6.7	5.2	0.084				
6056		31	28	51	C	34	32	15	42	0.0	7.7	5.8	0.150				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6055			16.9	10.9	2.2	0.5	30.5		34.0					89	0.6	6					
6056			24.7	16.1	2.8	0.7	44.3		49.3					89	0.6	6					

Soil Series : ...

Soil Association : ...

Soil Pit Nº : 7S.1-(1,2,3,4)

Location : Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6415		18	28	¥54	C	36	34	16	48	0.0	6.1	3.8	0.049				
6416		28	30	42	C	30	28	13	47	0.0	6.3	4.5	0.064				
6417		32	32	36	CL	27	26	12	38	0.0	6.8	5.0	0.070				
6418		24	30	46	C	32	30	14	42	0.0	6.6	4.5	0.102				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	←	meq / 100g		→					←	mg / 100	→	ppm
6415			3.8	18.5	1.3	0.3	23.9		38.5					62	0.4	3					
6416			15.7	14.8	1.1	0.4	32.0		35.1					91	0.3	3					
6417			14.1	14.4	1.1	0.3	29.9		32.9					91	0.3	3					
6418			15.7	15.6	1.6	0.4	33.2		43.1					77	0.4	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 7S-6 (A, B, C, D) .... Location : NUMAN ....

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity	pH		EC. X 10^3 mmhos/cm	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %		cm/hr	H20 (1:2.5)	KCl IN (1:2.5)	(1: 2.5)	C %	N %	C/N	O. M. %
6057		45	24	31	SCL	23	22	10	51	0.2	6.3	5.1	0.058				
6058		39	28	33	CL	25	24	11	46	0.5	5.6	4.3	0.031				
6059		57	27	16	SL	15	15	6	50	4.0	6.0	4.2	0.030				
6060		33	34	33	CL	26	25	11	50	0.0	7.1	5.7	0.046				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6057			16.3	10.9	0.3	1.0	28.5		36.6					78	0.1	1					
6058			15.9	10.3	0.5	0.4	27.1		39.3					69	0.1	1					
6059			5.9	3.9	0.8	0.2	10.8		13.3					81	0.4	7					
6060			16.3	10.3	2.7	0.5	30.1		39.4					76	0.7	7					

Soil Series : ....

Soil Pit Nº : 7S-10 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6061		33	36	31	CL	25	24	11	50	0.1	5.9	5.0	0.102				
6062		27	40	33	CL	27	26	12	41	0.2	5.6	4.8	0.046				
6063		38	45	17	L	19	18	7	36	0.7	6.4	5.0	0.031				
6064		46	45	9	L	15	15	6	36	4.2	6.0	5.0	0.220				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6061			19.1	10.6	0.2	0.7	30.6		39.3					78	0.1	1					
6062			14.7	8.9	0.2	0.5	24.3		33.1					73	0.1	1					
6063			8.3	5.2	0.1	0.3	13.9		18.1					77	–	1					
6064			5.8	3.1	tr	0.2	9.1		17.0					54	–	–					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ....7S-12 (A,B).................. Location: .....NUMAN..............................

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6065		57	34	9	SL	13	13	5	36	2.8	6.3	4.3	0.080				
6066		53	34	13	SL	15	15	6	48	2.6	7.2	5.3	0.085				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6065			5.5	4.1	0.4	0.2	10.2		13.7					74	0.2	3					
6066			6.6	1.4	0.8	0.1	8.9		10.7					83	0.4	7					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ..... 7S. - 18(1,2,3,4) .... Location: .... Numan ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6419		28	52	20	SiL	22	21	9	41	0.9	6.6	5.4	0.126				
6420		16	44	40	SIC/SICL	31	29	13	52	0.0	6.5	5.0	0.080				
6421		18	38	44	C	32	30	14	52	0.0	6.5	4.8	0.054				
6422		44	30	26	L	21	21	9	40	0.0	6.8	5.0	0.046				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←			meq / 100g					→	←	meq / 100g		→					←	mg / 100	→	ppm
6419			11.3	9.9	0.2	0.5	21.9		22.7					96	0.1	1					
6420			19.1	14.8	0.4	0.5	34.8		40.8					85	0.1	1					
6421			19.1	14.4	0.4	0.4	34.3		39.7					86	0.1	1					
6422			11.3	10.3	0.3	0.2	22.1		19.3					100	0.1	2					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 8N-2 (A,B) .... Location : NUMAN ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6067		23	27	50	C	33	31	14	66		6.9	5.0	0.080				
6068		25	29	46	C	32	30	14	63		7.0	4.8	0.080				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←	meq / 100g							→	←	meq / 100g		→					←	mg / 100	→	ppm
6067			20.6	24.8	2.1	0.5	48.0		56.6					85	0.4	4					
6068			18.4	24.8	2.0	0.5	45.7		56.6					80	0.4	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 8N-4 (A,B,C,D) .... Location : NUMAN ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (12.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6069		15	34	51	C	35	33	15	72	0.0	5.8	4.0	0.076				
6070		14	35	51	C	35	33	15	70	0.0	5.8	4.1	0.086				
6071		17	26	57	C	37	35	16	71	0.0	6.2	4.4	0.086				
6072		15	30	55	C	37	35	16	71	0.0	7.4	5.4	0.086				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6069			18.1	22.9	0.4	0.7	42.1		59.3					71	0.1	1					
6070			20.6	22.6	1.5	0.6	45.3		55.8					81	0.3	3					
6071			21.6	21.1	2.1	0.7	43.4		47.2					92	0.5	4					
6072			21.6	18.8	1.5	0.6	42.5		48.0					89	0.3	3					

Soil Series : .... Soil Association : ....

Soil Pit Nº : .... 8S - 2 (1,2,3,4) .... Location: .... Numan ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6423		38	32	30	CL	24	23	10	37	0.0	6.2	4.1	0.060				
6424		44	34	22	L	20	19	8	39	0.0	6.2	4.1	0.062				
6425		36	34	30	CL	24	23	10	38	0.0	6.8	4.7	0.120				
6426		22	26	52	C	34	32	15	54	0.0	6.8	5.7	0.500				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6423			11.0	11.9	0.5	0.3	23.7		26.1					91	0.2	2					
6424			6.3	8.6	0.9	0.2	16.0		18.9					85	0.3	5					
6425			6.3	5.8	1.4	0.2	13.7		17.0					81	0.6	8					
6426			23.2	16.5	5.3	0.3	45.3		46.5					97	1.2	11					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 8S-6 (A,B) .... Location : NUMAN ....

Lab. Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H_2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6073		74	19	7	SL	9	9	3	31		6.1	4.4	0.042				
6074		27	34	39	SCL	28	27	12	42		7.3	5.0	0.146				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6073			3.8	4.9	0.6	0.3	9.6		14.1					68	0.3	4					
6-74			14.7	12.6	3.9	0.5	31.7		38.0					83	1.1	10					

Soil Series : ....

Soil Pit Nº : 8S-9 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6075		49	20	31	SCL	22	21	9	42	0.7	6.1	4.8	0.058				
6076		81	8	11	SL	10	10	4	32	2.5	6.2	4.8	0.035				
6077		93	2	5	S	6	7	2	22	9.1	6.1	4.9	0.046				
6078		93	2	5	S	6	7	2	22	8.3	6.0	4.7	0.046				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g			→					← mg / 100		→	ppm
6075			15.6	19.0	0.9	0.6	36.1		45.4					79	0.2	2					
6076			1.6	2.0	0.6	0.5	4.7		9.9					47	0.4	6					
6077			3.1	2.4	0.4	0.3	6.2		15.5					40	0.2	6					
6078			3.1	3.7	0.6	0.2	7.6		9.9					76	0.3	6					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 8S-12 (A,B,C,D,E) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10³ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6079		45	23	27	L	21	20	9	40	1.3	6.0	4.8	0.046				
6080		74	14	12	SL	11	11	4	33	1.1	6.1	4.7	0.046				
6081		56	21	23	SCL	18	18	7	47	0.7	6.1	4.6	0.048				
6082		46	35	19	SCL	18	18	7	47	0.6	6.3	4.5	0.050				
6083		43	26	31	CL	23	22	10	56	0.0	5.5	4.3	0.190				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO₄	Cl	CO₃	HCO₃	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K₂O	P
	← meq / 100g →									← meq / 100g →								← mg/100 →			ppm
6079			15.3	15.4	0.3	0.4	31.4		35.2					89	0.1	1					
6080			5.9	5.4	0.8	0.3	12.4		17.7					70	0.3	5					
6081			10.0	13.9	0.5	0.4	24.8		30.6					81	0.1	2					
6082			8.8	12.6	0.6	0.6	22.6		31.3					72	0.2	2					
6083			12.8	16.5	0.7	0.4	30.4		41.4					73	0.2	2					

Soil Series: ...

Soil Pit Nº: 8S-15 (A, B, C)

Soil Association: ...

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6084		51	23	26	SCL	20	19	8	46	0.3	6.0	4.6	0.054				
6085		75	15	10	SL	10	10	4	35	1.3	6.3	4.8	0.054				
6086		95	1	4	S	5	6	2	22	8.5	6.4	8.3	0.054				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg/100 →			ppm
6084			12.8	7.2	0.8	0.4	21.2		32.4					65	0.3	2					
6085			6.3	5.3	0.6	0.3	12.5		19.8					63	0.2	3					
6086			3.1	2.5	0.7	0.2	6.5		9.6					68	0.4	7					

Soil Series : ....

Soil Pit Nº : 9N - 2(1,2,3,4)

Soil Association : ....

Location : Numan

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6427		14	30	56	C	37	35	16	55	0.0	6.4	4.3	0.064				
6428		16	30	54	C	36	34	16	50	0.0	6.7	5.0	0.124				
6429		22	32	46	C	32	30	14	48	0.0	7.0	5.4	0.116				
6430		36	38	26	L	23	22	10	40	0.0	7.3	5.6	0.112				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6427			21.6	21.4	1.6	0.5	45.1		52.1					87	0.3	3					
6428			19.4	22.2	2.1	0.5	44.2		53.3					83	0.5	4					
6429			17.2	13.8	1.9	0.3	33.2		40.8					81	0.5	5					
6430			9.1	8.4	1.6	0.2	19.3		21.5					90	0.5	7					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ..... 9S-6 (A,B,C,D) .... Location : .... NUMAN ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (12.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6087		33	44	23	L	22	21	9	46	0.8	4.9	4.3	0.050				
6088		25	38	47	C	34	32	15	61	0.0	5.4	4.5	0.035				
6089		33	48	19	L	20	19	8	46	0.8	6.1	4.9	0.050				
6090		30	31	39	CL	28	27	12	50	0.0	6.9	5.2	0.036				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←		meq / 100g						→	←	meq / 100g		→					←	mg / 100	→	ppm
6087			23.0	11.6	0.5	0.6	35.7		44.4					80	0.1	1					
6088			20.9	12.7	0.6	0.6	34.8		46.4					75	0.1	1					
6089			10.0	6.2	0.7	0.5	17.4		24.2					72	0.2	3					

Soil Series : ....

Soil Pit Nº : 9S-9 (A,B,C,D,E)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (12.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6091		30	31	39	CL	28	27	12	48	0.0	6.8	5.1	0.055				
6092		27	24	49	C	32	30	14	58	0.0	5.2	4.4	0.038				
6093		54	21	25	SCL	19	18	7	46	0.7	7.6	6.1	0.045				
6094		33	28	39	CL	28	27	12	50	0.0	6.3	5.1	0.040				
6095		31	24	45	C	30	28	13	57	0.0	5.8	4.7	0.058				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6091			22.2	13.9	0.5	0.8	37.4		48.0					80	0.1	1					
6092			20.6	10.9	0.9	0.7	33.1		46.4					71	0.2	2					
6093			9.4	6.2	0.4	0.4	16.4		20.2					81	0.1	2					
6094			14.4	9.8	0.4	0.6	25.2		33.1					76	–	1					
6095			16.9	11.9	0.4	0.5	29.7		35.7					83	–	1					

Soil Series : ....

Soil Pit Nº : 9S-14 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6096		16	39	45	C	33	31	14	66	0.0	6.6	4.9	0.055				
6097		26	29	45	C	31	29	13	68	0.0	6.5	5.1	0.150				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6096			19.7	13.1	1.5	1.0	35.3		43.7					81	0.4	3					
6097			23.4	10.9	0.8	0.6	35.7		40.2					89	0.2	2					

Soil Series : ....

Soil Pit Nº : 9S-15 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6098		17	31	52	C	35	33	15	70	0.0	5.7	4.5	0.054				
6099		21	47	32	CL	27	26	12	50	0.0	7.6	6.2	0.045				

Lab. Nº	Fe (meq/100g)	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4 (meq/100g)	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO (mg/100)	MgO	K_2O	P ppm
6098			23.4	14.8	0.4	0.7	39.3		49.1					80	0.1	1					
6099			16.3	10.7	0.8	0.6	28.4		33.1					86	0.2	2					

Soil Series : ....
Soil Pit Nº : .... 10N-4 (A,B,C) ....

Soil Association : ....
Location : .... NUMAN ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:)	KCl 1N (1:)	EC $\times 10^3$ mmhos/cm (1:)	Organic Fraction C %	N %	C/N	O. M. %
6100		19	29	52	C	35	33	15	61	0.0	6.2	4.6	0.050				
6101		17	31	52	C	35	33	15	64	0.0	7.8	6.0	0.200				
6102		55	26	19	SL	17	17	7	43	1.8	8.1	6.4	0.130				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6100			19.1	13.5	1.1	0.6	34.3		47.3					73	0.3	2					
6101			29.1	13.1	2.0	0.6	44.8		49.1					91	0.4	4					
6102			9.5	4.1	1.1	0.2	14.9		20.7					72	0.4	5					

Soil Series : ....

Soil Pit Nº : 10N-7 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6103		11	29	60	C	39	37	17	67	0.0	8.2	6.2	0.120				
6104		11	42	47	C	34	32	15	53	0.0	7.7	5.8	0.110				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6103			14.4	15.7	5.7	1.0	36.8		41.7					88	1.5	14					
6104			19.7	11.9	2.0	0.7	34.3		41.1					83	0.5	5					

Soil Series : ....
Soil Pit Nº : 10S-2 (A,B,C)

Soil Association : ....
Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H_2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6105		11	51	38	SiCL	31	29	13	36	0.0	6.0	4.0	0.031				
6106		37	26	37	CL	26	25	11	55	0.0	6.6	4.5	0.049				
6107		23	18	59	C	37	35	16	63	0.0	6.5	4.6	0.146				

Lab. Nº	Fe (meq / 100g)	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4 (meq / 100g)	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO (mg / 100)	MgO	K_2O	P ppm
6105			14.7	10.6	1.4	0.5	27.2		38.4					71	0.4	4					
6106			12.8	8.8	0.8	0.4	22.8		33.1					69	0.2	2					
6107			22.2	10.5	2.0	0.6	35.3		42.8					82	0.5	5					

Soil Series : ....

Soil Pit Nº : 10S-8 (A, B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H_2O (1:2.5)	KCl 1N (1:2.5)	EC $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6108		65	22	13	SL	13	13	5	47	2.1	5.8	4.3	0.040				
6109		23	28	49	C	33	31	14	47	0.0	7.7	5.9	0.165				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg/100		→	ppm
6108			4.4	2.5	0.9	0.2	8.0		16.2					~~119~~ 49	0.5	6					
6109			22.2	11.3	3.6	0.7	37.8		42.0					90	0.9	9					

Soil Series : .... Soil Association : ....

Soil Pit Nº : .... 10S–12 (A,B,C) .... Location: .... NUMAN ....

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity	pH		E.C. $\times 10^3$ mmhos/cm	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %		cm/hr	H20 (1:2.5)	KCl 1N (1:2.5)	(1:2.5)	C %	N %	C/N	O. M. %
6110		17	32	51	C	35	33	15	64	0.0	5.9	4.5	0.042				
6111		17	28	55	C	36	34	16	67	0.0	5.4	4.1	0.042				
6111A		13	55	32	SiCL	28	27	12	46	0.1	7.2	5.3	0.058				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	CaO	MgO	K_2O	P ppm
6110			25.0	13.9	0.6	0.7	40.2		48.2					83	0.1	1					
6111			20.6	13.9	1.4	0.5	36.4		49.9					73	0.3	3					
6111A			13.3	7.6	0.8	0.4	22.1		29.5					75	0.1	3					

Soil Series : ....

Soil Pit Nº : 10S–16 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6112		13	34	53	C	36	34	16	60	0.0	6.7	4.7	0.047				
6113		13	48	39	SiCL	31	29	13	44	0.0	6.8	5.3	0.052				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6112			22.5	12.7	1.0	0.5	36.7		45.5					81	0.1	2					
6113			16.9	9.4	1.0	0.5	27.8		35.7					78	0.3	3					

Soil Series : ....

Soil Association : ....

Soil Pit Nº : 11N-3 (A,B)

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6209		7	26	67	C	42	39	19	56	0.0	7.0	4.8	0.064				
6210		27	40	33	CL	27	26	12	53	0.0	7.5	5.5	0.118				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6209			15.0	10.7	2.2	0.3	28.2		30.0					94	0.4	7					
6210			12.2	9.7	0.3	0.4	22.6		27.8					81	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 11S-3 (A, B, C) .... Location : .... NUMAN ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6211		31	28	41	C	29	28	12	47	0.0	6.0	4.6	0.078				
6212		39	34	27	L	23	22	10	45	1.7	6.1	4.5	0.098				
6213		29	48	23	L	23	22	10	39	1.1	6.4	4.6	0.054				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6211			23.8	13.4	0.2	0.4	37.8		42.1					90	–	–					
6212			14.4	5.8	2.1	0.2	22.5		24.3					93	0.5	9					
6213			11.6	8.6	2.9	0.2	23.3		24.8					94	0.7	12					

Soil Series : ....

Soil Pit Nº : 11S-8 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (12.5)	KCl IN (12.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6218		54	21	25	SCL	19	18	7	38	0.0	6.0	4.2	0.052				
6219		32	25	43	C	30	28	13	50	0.0	7.2	5.5	0.148				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6218			9.7	8.2	0.6	0.3	18.8		24.3					77	0.1	2					
6219			20.9	12.4	1.5	0.4	35.2		39.1					90	0.3	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 11S-15 (A,B,C,D) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6220		22	41	37	CL	29	28	12	50	0.0	6.6	5.2	0.250				
6221		31	26	43	C	30	28	13	48	0.0	6.6	4.5	0.054				
6222		29	28	43	C	30	28	13	48	0.0	6.6	4.2	0.066				
6223		45	32	23	L	20	19	8	36	0.0	6.9	4.7	0.045				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6220			25.6	13.6	2.7	0.7	42.6		44.4					96	0.4	6					
6221			22.2	11.9	3.5	0.4	38.0		39.0					97	0.6	9					

Soil Series ....

Soil Pit Nº : 12N-3 (A,B)

Soil Association : ....

Location : NUMAN

Lab. Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6224		11	24	65	C	41	38	18	56	0.0	6.4	4.2	0.078				
6225		25	14	61	C	37	35	16	60	0.0	5.7	4.2	0.128				

Lab. Nº	Fe (meq / 100g)	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4 (meq / 100g)	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO (mg / 100)	MgO	K_2O	P ppm
6224			28.4	19.6	5.4	0.6	54.0		59.6					91	1.1	9					
6225			27.2	19.1	4.6	0.5	51.4		58.9					87	1.0	8					

Soil Series : ....

Soil Pit Nº : ..... 12N 15(1,2,3,4) ....

Soil Association : ....

Location : ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6430A		37	32	31	CL				47	0.0	6.6	5.8	0.092				
6431		23	39	38	CL	29	28	12	49	0.0	6.8	5.0	0.068				
6432		25	31	44	C	31	29	13	52	0.0	6.2	4.6	0.210				
6433		21	33	46	C	32	30	14	50	0.0	6.8	4.6	0.052				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6430A			13.5	14.4	0.7	0.1	28.7		32.9					87	0.2	2					
6431			16.9	11.5	0.2	0.4	29.0		34.0					85	0.1	1					
6432			15.7	11.9	0.8	0.4	28.8		36.5					79	0.2	2					
6433			13.5	11.5	0.6	0.3	25.9		37.4					69	0.2	2					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 12S-3 (A,B,C) Location : NUMAN

Lab. Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6229		25	42	33	SiL	27	26	12	44	0.0	5.9	4.2	0.082				
6230		45	14	41	SC	27	26	12	46	1.1	8.3	5.2	0.860				
6231		25	32	43	L	31	29	13	45	0.0	6.0	5.7	0.080				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6229			21.6	15.2	tr	0.8	37.6		45.5					83	-	-					
6230			21.6	13.2	2.0	0.4	37.2		41.0					91	0.5	5					
6231			17.5	14.4	2.6	0.4	34.9		26.4					96	0.7	7					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 12S-6 (A,B,C) .... Location: .... NUMAN ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6232		19	32	49	C	34	32	15	45	0.7	7.3	4.4	0.160				
6233		27	28	45	C	31	29	13	52	0.0	7.3	5.4	0.490				
6234		24	31	45	C	31	29	13	50	0.0	6.2	5.6	0.106				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6232			25.6	16.7	0.4	0.5	43.2		44.4					97	0.1	1					
6233			26.6	14.6	1.7	0.4	43.3		45.0					96	0.4	4					
6234			25.9	13.6	1.7	0.4	41.6		48.7					85	0.4	3					

Soil Series : ...

Soil Pit Nº : 12S-11 (A,B)

Soil Association : ...

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6235		22	33	45	C	32	30	14	49	0.0	7.3	4.5	0.136				
6236		23	38	39	CL	29	28	12	48	0.0	7.5	5.8	0.124				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6235			23.8	11.5	1.6	0.3	37.2		37.8					98	0.4	4					
6236			23.4	10.1	1.9	0.3	35.7		36.9					97	0.5	5					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 13N-3 (A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6237		10	23	67	C	42	39	19	55	0.0	6.8	4.8	0.090				
6238		8	21	71	C	44	41	40	66	0.0	7.3	5.6	0.066				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6237			30.9	19.6	1.3	0.8	52.6		56.6					93	0.3	2					
6238			37.8	21.8	1.4	0.6	61.6		66.9					92	0.3	2					

Soil Series: ....

Soil Pit Nº: 13N-6 (A,B,C,D)

Soil Association: ....

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6239		10	17	73	C	44	41	20	72	0.0	6.7	4.3	0.050				
6240		6	11	83	C	48	45	22	88	0.0	6.8	5.2	0.068				
6241		6	15	79	C	47	44	21	90	1.0	6.0	5.6	0.820				
6242		8	15	77	C	46	43	21	80	0.0	6.9	5.8	0.096				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6239			31.6	20.6	1.5	0.7	54.4		55.5					98	0.3	3					
6240			35.0	22.0	2.9	0.7	60.6		62.6					97	0.5	5					
6241			34.1	22.8	4.2	0.5	61.6		66.5					93	0.8	6					
6242			39.1	24.9	5.4	0.6	70.0		71.1					98	1.0	8					

Soil Series: ....

Soil Pit Nº: 13N-9 (A,B)

Soil Association: ....

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6243		10	21	69	C	43	40	19	64	0.0	7.0	4.5	0.098				
6244		12	23	65	C	41	38	18	65	0.0	7.5	4.7	0.058				

Lab. Nº	Fe (meq/100g)	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4 (meq/100g)	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO (mg/100)	MgO	K_2O	P ppm
6243			27.5	18.5	2.7	0.6	49.3		49.9					99	0.6	5					
6244			26.6	17.1	3.3	0.5	47.5		47.6					100	0.7	7					

Soil Series: ...

Soil Pit Nº: 13S-3 (A,B,C,D)

Soil Association: ...

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6245		14	35	51	C	35	33	15	54	0.0	7.4	4.5	0.160				
6246		16	31	53	C	36	34	16	54	0.0	7.0	4.3	0.068				
6247		40	23	37	CL	26	25	11	47	0.0	8.0	5.3	0.140				
6248		30	33	37	CL	28	27	12	50	0.0	5.9	5.6	0.126				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6245			24.2	16.3	0.2	0.6	41.3		44.3					93	0.0	0					
6246			25.9	15.0	1.4	0.3	42.6		45.2					94	0.3	3					
6247			20.3	10.3	1.4	0.3	32.3		34.0					95	0.4	4					
6248			21.3	10.1	1.4	0.3	33.1		37.8					88	0.4	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 13S-6 (A,B,C,D) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6249		19	40	41	SiC	31	29	13	53	0.0	6.2	5.1	0.102				
6250		31	26	43	C	30	28	13	48	0.0	6.0	4.9	0.170				
6251		34	30	33	CL	25	24	11	42	0.0	8.0	5.5	0.160				
6252		43	34	23	L	20	19	8	37	0.0	6.4	5.7	0.090				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g			→					← mg / 100		→	ppm
6249			24.4	13.0	0.1	0.5	38.0		42.1					90	-	-					
6250			21.3	10.5	1.3	0.3	33.4		38.6					87	0.3	3					
6251			17.2	6.8	1.1	0.3	25.4		29.4					86	0.3	4					
6252			12.8	5.4	1.1	0.2	19.5		22.4					87	0.4	5					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 13S-9 (A,B) .... Location: ...... NUMAN ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6253		15	32	53	C	36	34	16	53	0.0	7.3	4.7	0.215				
6254		25	44	31	CL	26	25	11	55	0.0	6.5	4.8	0.092				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6253			20.9	13.4	0.7	0.4	35.4		40.6					87	0.2	2					
6254			14.1	7.8	0.4	0.3	22.6		27.0					84	0.1	1					

Soil Series : ....

Soil Pit Nº : 14N-2 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6124		17	29	54	C	36	34	16	65	0.0	6.0	4.7	0.069				
6125		19	23	48	C	31	29	13	55	0.0	6.6	4.9	0.060				
6126		21	29	50	C	34	32	15	68	0.0	7.8	5.8	0.120				
6127		15	25	60	C	38	36	17	74	0.0	7.8	5.9	0.192				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6124			21.6	22.6	0.4	1.1	45.7		57.9					79	0.1	1					
6125			18.4	26.9	2.7	0.5	48.5		50.9					95	0.6	5					
6126			22.5	18.8	5.2	0.4	46.9		53.7					87	1.1	10					
6127			24.7	20.3	0.3	0.4	45.7		54.3					84	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : .... 14N-6 (A, B) .... Location : .... NUMAN ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (12.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6128		13	19	68	C	42	39	19	86	0.0	7.5	5.8	0.083				
6129		13	15	72	C	43	40	19	85	0.0	7.8	5.5	0.114				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6128			25.6	27.5	0.7	0.8	51.6		62.1					88	0.1	1					
6129			29.1	28.5	0.4	0.7	58.7		66.0					89	0.1	1					

Soil Series : ...

Soil Pit Nº : 14N-8 (A,B,C,D)

Soil Association : ...

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6130		9	23	68	C	42	39	19	74	0.0	6.0	4.1	0.039				
6131		11	21	68	C	42	39	19	73	0.0	6.1	4.3	0.041				
6132		9	17	74	C	44	41	20	83	0.0	6.1	4.2	0.054				
6133		9	17	74	C	44	41	20	85	0.0	6.0	4.1	0.045				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6130			22.5	25.7	0.6	0.9	49.7		56.4					88	0.1	1					
6131			24.7	25.7	0.4	1.1	51.9		62.0					84	0.1	1					
6132			22.5	23.4	0.5	0.3	46.7		55.0					85	0.1	1					
6133			23.6	24.2	1.5	0.8	50.1		57.9					87	0.3	3					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 14S-2 (A,B,C,D) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6114		23	33	42	C	30	28	13	58	0.0	5.9	4.8	0.056				
6115		35	33	32	CL	25	24	11	41	0.0	6.5	4.9	0.060				
6116		25	35	40	CL/C	29	28	12	54	0.0	7.9	6.0	0.155				
6117		21	35	44	C	31	29	13	58	0.0	7.8	6.1	0.200				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6114			12.5	12.9	0.6	0.3	26.3		41.0					64	0.2	1					
6115			9.4	12.6	1.4	0.4	23.8		28.2					84	0.4	5					
6116			14.7	17.5	2.2	0.5	34.9		39.5					88	0.5	6					
6117			19.4	18.8	3.0	0.5	41.7		43.8					95	0.7	7					

Soil Series : ....

Soil Pit Nº : 14S-5 (A_1,B_1,C_1,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6118		13	35	52	C	36	34	16	62	0.0	6.0	4.6	0.060				
6119		17	29	54	C	36	34	16	71	0.0	6.5	4.9	0.054				
6120		32	32	36	CL	27	26	12	52	0.0	7.2	5.7	0.076				
6121		24	44	32	CL	27	26	12	47	0.0	7.6	6.0	0.126				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←		meq / 100g						→	←	meq / 100g		→					←	mg / 100	→	ppm
6118			21.6	21.3	0.3	0.7	44.4		63.4					70	–	–					
6119			21.6	19.5	1.2	0.5	42.8		57.8					74	0.3	2					
6120			14.7	13.9	1.2	0.4	30.2		41.0					74	0.3	3					
6121			15.3	10.8	1.9	0.4	28.4		35.2					81	0.5	7					

Soil Series : ....

Soil Pit Nº : 13S-6 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6249		19	40	41	SiC	31	29	13	53	0.0	6.2	5.1	0.102				
6250		31	26	43	C	30	28	13	48	0.0	6.0	4.9	0.170				
6251		34	30	33	CL	25	24	11	42	0.0	8.0	5.5	0.160				
6252		43	34	23	L	20	19	8	37	0.0	6.4	5.7	0.090				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6249			24.4	13.0	0.1	0.5	38.0		42.1					90	-	-					
6250			21.3	10.5	1.3	0.3	33.4		38.6					87	0.3	3					
6251			17.2	6.8	1.1	0.3	25.4		29.4					86	0.3	4					
6252			12.8	5.4	1.1	0.2	19.5		22.4					87	0.4	5					

Soil Series : ....

Soil Pit Nº : 14S-5 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6118		13	35	52	C	36	34	16	62	0.0	6.0	4.6	0.060				
6119		17	29	54	C	36	34	16	71	0.0	6.5	4.9	0.054				
6120		32	32	36	CL	27	26	12	52	0.0	7.2	5.7	0.076				
6121		24	44	32	CL	27	26	12	47	0.0	7.6	6.0	0.126				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←			meq / 100g					→	←	meq / 100g		→					←	mg / 100	→	ppm
6118			21.6	21.3	0.3	0.7	44.4		63.4					70	–	–					
6119			21.6	19.5	1.2	0.5	42.8		57.8					74	0.3	2					
6120			14.7	13.9	1.2	0.4	30.2		41.0					74	0.3	3					
6121			15.3	10.8	1.9	0.4	28.4		35.2					81	0.5	7					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 14S-8 (A,B) .... Location: NUMAN ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl IN (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6122		32	46	22	L	22	21	9	39	1.2	7.8	5.8	0.074				
6123		40	40	20	L	20	19	8	40	1.4	6.6	4.5	0.038				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6122			8.1	6.3	2.2	0.3	16.9		19.7					86	0.8	13					
6123			7.8	7.7	0.6	0.3	16.4		18.9					87	0.2	3					

Soil Series : ....

Soil Pit Nº : ....14S. - 11(1,2,3,4,5)........

Soil Association : ....

Location: .... Numan ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6434		17	51	32	SICL	28	27	12	50	0.0	6.6	5.0	0.050				
6435		31	34	35	CL	27	26	12	50	0.0	6.3	5.1	0.170				
6436		25	36	39	CL	29	28	12	51	0.0	6.7	5.1	0.088				
6437		31	36	33	CL	26	25	11	45	0.0	6.0	5.0	0.120				
6438		45	36	19	L	18	18	7	39	1.0	6.5	5.1	0.150				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6434			13.2	10.3	0.2	0.5	24.2		32.4					75	0.1	1					
6435			17.5	9.7	0.2	0.4	27.8		30.8					90	0.1	1					
6436			13.8	10.7	0.3	0.3	25.1		31.7					79	0.1	1					
6437			11.3	8.4	0.5	0.3	20.5		24.9					82	0.2	2					
6438			6.9	5.6	0.2	0.2	12.9		15.9					81	0.1	1					

Soil Series : ....

Soil Pit Nº : 15N-3 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6134		13	26	61	C	39	37	17	68	0.0	6.0	4.4	0.039				
6135		15	24	61	C	38	36	17	68	0.0	6.2	4.8	0.049				
6136		13	26	61	C	39	37	17	69	0.0	6.4	5.0	0.063				
6137		13	22	65	C	41	38	18	77	0.0	6.1	4.6	0.056				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←			meq / 100g					→	←	meq / 100g		→					←	mg / 100	→	ppm
6134			21.6	24.2	1.5	0.8	48.1		60.7					79	0.3	2					
6135			23.1	26.2	0.4	1.0	50.7		62.1					82	0.1	1					
6136			20.6	23.4	1.6	1.3	46.9		56.5					83	0.3	3					
6137			22.5	24.2	1.2	0.9	48.8		62.1					79	0.2	2					

Soil Series : ....

Soil Pit Nº : 15N-6 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6138		14	21	65	C	40	37	18	70	0.0	5.8	4.8	0.206				
6139		14	19	67	C	41	38	18	77	0.0	5.6	4.4	0.130				
6140		10	17	73	C	44	41	20	75	0.0	6.2	4.8	0.070				
6141		10	17	73	C	44	41	20	75	0.0	6.3	4.8	0.070				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6138			25.0	24.9	0.6	2.1	52.6		66.4					79	0.1	1					
6139			19.4	21.9	1.4	1.0	43.7		55.0					79	0.3	3					
6140			20.6	21.1	2.1	1.1	44.9		56.4					80	0.5	4					
6141			21.6	23.4	1.9	0.8	47.7		56.4					84	0.4	3					

Soil Series : ......

Soil Pit Nº : 15N-9 (A,B)

Soil Association : ......

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6142		9	20	71	C	43	40	19	83	0.0	6.4	5.0	0.076				
6143		9	14	77	C	45	42	20	83	0.0	7.1	5.6	0.095				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6142			26.9	24.2	2.7	0.7	54.5		67.8					80	0.5	4					
6143			25.6	24.2	3.5	0.5	53.8		65.0					83	0.7	5					

Soil Series : ....

Soil Pit Nº : -15S-3 (A,B,C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity cm/hr	pH		E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %			H20 (1:2.5)	KCl 1N (1:2.5)		C %	N %	C/N	O. M. %
6144		15	32	53	C	36	34	16	65	0.0	5.4	4.3	0.046				
6145		19	36	45	C	32	30	14	56	0.0	6.4	4.8	0.062				
6146		21	42	37	CL	29	28	12	51	0.0	6.7	5.3	0.072				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6144			21.6	21.1	0.6	0.7	44.0		56.5					78	0.1	1					
6145			20.6	21.1	1.1	0.6	43.4		49.5					87	0.2	2					
6146			16.6	17.5	1.2	0.8	36.1		41.8					86	0.3	3					

Soil Series: ...

Soil Pit Nº: 15S-6 (A,B,C,D)

Soil Association: ...

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6147		17	36	47	C	33	31	14	62	0.0	5.8	4.4	0.042				
6148		22	27	51	C	34	32	15	62	0.0	5.9	4.3	0.038				
6149		36	35	29	CL	24	23	10	41	0.6	5.6	4.2	0.028				
6150		46	27	17	L	16	16	6	36	0.9	6.0	4.3	0.030				

Lab. Nº	Fe (meq / 100g)	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4 (meq/100g)	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO (mg/100)	MgO	K_2O	P ppm
6147			13.8	14.4	4.3	0.6	33.1		52.1					64	1.1	8					
6148			22.5	20.3	2.7	0.6	46.1		56.5					81	0.6	5					
6149			20.6	17.5	2.8	0.5	41.4		58.2					71	0.6	5					
6150			10.3	10.3	0.5	0.3	21.4		27.2					78	0.2	2					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 15S-9 (A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6151		34	35	31	CL	25	24	11	54	0.4	5.9	4.3	0.053				
6152		42	33	25	L	21	20	9	44	1.6	6.0	4.5	0.060				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6151			13.8	14.8	1.1	0.3	30.0		36.8					81	0.3	3					
6152			13.8	16.9	1.6	0.3	32.6		38.3					85.	0.4	4					

Soil Series : ....

Soil Pit Nº : 16N-4 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6260		15	24	61	C	39	37	17	59	0.0	5.0	3.8	0.056				
6261		13	20	67	C	41	38	18	52	0.0	5.8	4.0	0.118				
6262		9	18	73	C	44	41	20	66	0.0	6.0	4.1	0.062				
6263		45	32	23	L	20	19	8	32	0.0	6.3	4.8	0.084				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E. C. P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6260			21.3	21.6	0.4	0.6	43.9		54.5					81	0.1	1					
6261			26.9	20.2	1.8	0.5	49.4		53.4					93	0.4	3					
6262			25.6	21.8	2.1	0.5	50.0		56.8					88	0.4	4					
6263			10.6	6.4	0.3	0.2	17.5		21.2					83	0.1	1					

Soil Series : ....

Soil Pit Nº : 16N-7 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6264		7	18	75	C	45	42	20	61	0.0	6.2	4.3	0.072				
6265		27	20	53	C	34	32	15	49	0.0	6.5	4.7	0.060				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6264			31.9	20.2	2.0	0.6	54.7		59.2					92	0.4	3					
6265			24.1	14.4	1.4	0.4	40.3		46.0					88	0.3	3					

Soil Series : ....

Soil Pit Nº : 16N-9 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	EC X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6266		13	22	65	C	41	38	18	53	0.0	5.2	4.2	0.180				
6267		9	10	81	C	47	44	21	60	0.0	6.3	4.3	0.045				
6268		31	32	37	CL	27	26	12	41	0.0	6.9	4.9	0.047				
6269		55	20	25	SCL	19	18	7	40	0.0	6.9	5.2	0.070				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6266			29.1	20.6	0.4	0.7	50.8		59.2					86	0.1	1					
6267			33.0	20.2	1.9	0.5	55.6		60.7					92	0.4	3					
6268			17.5	9.3	1.2	0.3	28.3		31.7					89	0.3	4					
6269			11.3	6.2	0.7	0.2	18.4		20.1					92	0.2	3					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 16S - 1(1,2,3,4) Location : Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6439		17	32	51	C	35	33	15	51	0.0	6.2	4.3	0.072				
6440		23	26	51	C	34	32	15	49	0.0	6.4	4.7	0.098				
6441		25	36	39	CL	29	28	12	48	0.0	7.1	5.8	0.195				
6442		29	38	33	CL	26	25	11	40	0.0	7.4	6.0	0.190				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6439			14.4	16.5	1.0	0.4	32.3		45.3					71	0.3	2					
6440			14.1	14.0	1.5	0.3	29.9		38.5					78	0.4	4					
6441			12.8	11.7	1.5	0.3	26.3		32.6					81	0.4	5					
6442			11.3	12.3	1.4	0.2	25.2		27.2					93	0.4	5					

Soil Series : ....   Soil Association : ....

Soil Pit Nº : 16S-4 (A,B,C)   Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:)	KCl 1N (1:)	EC. X 10^3 mmhos/cm (1:)	Organic Fraction C %	N %	C/N	O. M. %
6255		25	24	51	C	34	32	15	52	0.0	8.0	4.6	0.175				
6256		19	32	49	C	34	32	15	45	0.0	6.6	4.4	0.110				
6257		25	32	43	C	31	29	13	61	0.0	8.0	4.5	0.160				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6255			16.3	16.1	tr	0.6	33.0		46.4					71	-	-					
6256			10.3	14.8	0.6	0.3	26.0		39.4					66	0.2	2					
6257			25.0	13.0	0.7	0.4	39.1		40.2					97	0.2	2					

Soil Series : ....

Soil Pit Nº : 16S-8 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (12.5)	pH KCl 1N (1:2.5)	EC. $\times 10^3$ mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6258		45	30	25	L	21	20	9	38	0.0	5.8	4.2	0.300				
6259		41	34	25	L	21	20	9	38	0.0	6.1	4.2	0.110				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E. C. P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6258			14.7	5.6	0.1	0.2	20.6		23.6					87	-	-					
6259			11.6	5.6	0.2	0.2	17.6		22.4					79	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ....17N-3 (A,B).......... Location : ....NUMAN....................

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6153		16	13	61	C	37	35	16	74	0.0	6.6	5.1	0.086				
6154		22	25	53	C	35	33	15	69	0.0	7.1	5.5	0.120				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6153			24.7	19.5	1.5	0.8	46.5		59.3					78	0.3	3					
6154			23.6	16.9	0.6	0.8	41.9		60.6					69	0.1	1					

Soil Series : ....

Soil Pit Nº : 17N–9 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6155		15	20	65	C	40	37	18	70	0.0	5.1	3.7	0.046				
6156		15	10	75	C	44	41	20	75	0.0	5.6	3.8	0.040				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g			→					← mg / 100		→	ppm
6155			18.8	22.1	1.2	0.9	43.0		57.9					74	0.3	2					
6156			23.6	21.8	1.2	0.8	47.4		59.3					80	0.3	2					

Soil Series: ....

Soil Pit Nº: 17N-14 (A,B,C,D)

Soil Association: ....

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6157		40	19	41	C	27	26	12	54	9.0	5.4	4.3	0.034				
6158		36	11	53	C	32	30	14	68	0.0	5.7	4.3	0.041				
6159		64	15	21	SCL	16	16	6	45	0.0	6.1	4.6	0.035				
6160		94	2	4	S	5	6	1	26	8.5	5.7	5.3	0.036				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6157			16.6	15.4	0.5	1.2	33.7		42.3					79	0.1	1					
6158			18.1	15.4	0.3	0.6	34.4		46.6					74	-	1					
6159			6.9	6.3	0.8	0.5	14.5		22.5					64	0.3	4					
6160			1.3	2.3	0.6	0.7	14.9		8.9					57	0.4	7					

Soil Series : ....
Soil Association : ....

Soil Pit Nº : 17S-2 (A,B,C,D)
Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity cm/hr	pH		EC. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %			H2O (1:2.5)	KCl 1N (1:2.5)		C %	N %	C/N	O. M. %
6161		26	33	43	C	31	29	13	56	0.0	5.6	4.3	0.063				
6162		26	29	45	C	31	29	13	58	0.0	5.9	4.4	0.041				
6163		36	48	26	CL	24	23	10	48	0.0	7.4	5.5	0.068				
6164		30	35	35	CL	27	26	12	52	0.0	7.9	5.9	0.164				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	CaO	MgO	K_2O	P
	meq / 100g									meq / 100g								mg / 100			ppm
6161			16.6	27.0	0.3	0.9	44.8		53.7					83	0.1	1					
6162			15.6	15.4	0.9	0.8	32.7		46.6					70	0.2	2					
6163			11.3	9.8	1.6	0.5	23.2		27.1					86	0.5	6					
6164			14.4	10.8	1.5	0.3	27.0		36.6					74	0.4	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ..... 17S-6 (A,B) .... Location : ..... NUMAN ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6165		41	36	23	L	21	20	9	45	1.2	6.4	4.6	0.041				
6166		30	39	31	CL	25	24	11	50	0.4	6.5	5.0	0.072				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6165			7.8	7.5	0.4	0.3	16.0		21.1					76	0.1	3					
6166			10.3	9.8	2.1	0.7	22.9		29.6					77	0.7	7					

Soil Series : ....

Soil Pit Nº : 17S - 11(1,2,3,4,5)

Soil Association : ....

Location: Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6443		13	42	45	SIC	33	31	14	54	0.0	6.0	4.7	0.120				
6444		15	32	53	C	36	34	16	53	0.0	6.1	4.4	0.195				
6445		11	3.0	59	C	39	37	17	75	0.0	6.1	4.5	0.114				
6446		11	32	57	C	38	36	17	71	0.0	6.9	5.4	0.120				
6447		13	36	51	C	35	33	15	71	0.0	7.2	5.2	0.066				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6443			15.7	16.9	0.5	0.5	33.6		48.7					69	0.1	1					
6444			16.9	18.5	0.8	0.5	36.7		46.7					79	0.3	2					
6445			17.5	19.6	1.5	0.6	39.2		44.4					88	0.4	3					
6446			18.2	19.4	1.8	0.4	39.8		49.9					80	0.4	4					
6447			17.2	18.7	1.3	0.2	37.4		45.3					82	0.3	3					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 18N - 1(1,2,3,4) Location : Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6448		17	34	49	C	34	32	15	42	0.0	6.3	4.4	0.070				
6449		15	32	53	C	36	34	16	74	0.0	6.5	4.5	0.080				
6450		13	34	53	C	36	34	16	75	0.0	6.9	5.4	0.102				
6451		11	32	57	C	38	36	17	53	0.0	7.1	5.2	0.092				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6448			15.3	16.5	0.6	0.5	32.9		44.2					74	0.2	1					
6449			15.7	17.3	1.2	0.5	34.5		45.3					76	0.3	3					
6450			18.2	18.5	1.5	0.5	38.7		44.2					88	0.4	3					
6451			19.4	18.9	1.8	0.4	40.5		51.0					79.	0.4	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 18N-4 (A,B,C) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. $X 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6167		13	22	65	C	41	38	18	69	0.0	6.0	4.4	0.043				
6168		13	20	67	C	41	38	18	70	0.0	6.0	4.1	0.036				
6169		12	17	71	C	43	40	19	77	0.0	6.1	4.4	0.054				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6167			22.5	26.7	0.6	0.9	50.7		63.5					80	0.1	1					
6168			22.5	24.2	1.52	0.8	49.0		62.1					79	0.3	2					
6169			20.9	21.8	1.4	0.6	44.7		60.7					74	0.3	2					

Soil Series : .... Soil Association : ......

Soil Pit Nº : 18N-9 (A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6170		12	16	71	C	43	40	19	79	0.0	6.0	4.0	0.052				
6171		10	21	69	C	42	39	19	72	0.0	6.0	4.0	0.045				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6170			23.6	20.3	2.5	0.7	47.1		56.5					83	0.5	4					
6171			19.4	18.8	1.6	0.5	40.3		50.9					79	0.4	3					

Soil Series : ....

Soil Pit Nº : 18N-12 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (12.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6172		14	21	65	C	40	37	18	74	0.0	6.5	4.8	0.075				
6173		16	25	59	C	38	36	17	66	0.0	5.8	4.7	0.044				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6172			20.6	18.8	1.7	0.5	41.5		55.1					75	0.4	3					
6173			20.6	17.0	1.6	0.4	39.6		50.9					78	0.4	3					

Soil Series : ....

Soil Pit Nº : 18S-2 (A, B, C, D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6174		37	32	31	CL	24	23	10	54	0.4	5.4	4.4	0.031				
6175		37	40	23	L	21	20	9	45	1.2	6.1	4.4	0.032				
6176		33	40	27	L	23	22	10	48	1.1	6.5	4.7	0.047				
6177		35	32	33	CL	25	24	11	56	0.8	5.6	4.8	0.032				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6174			16.6	12.6	0.9	0.5	30.6		38.2					80	0.2	2					
6175			7.8	8.5	0.7	0.4	17.4		22.7					76	0.2	3					
6176			9.6	8.5	0.6	0.3	19.0		22.6					84	0.2	3					
6177			12.5	10.0	0.6	0.3	23.4		32.4					72	0.2	2					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 18S-4 (A,B,C,D) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6178		53	26	21	SCL	18	18	7	41	0.4	5.9	4.3	0.030				
6179		34	33	33	CL	25	24	11	58	0.6	6.0	4.6	0.036				
6180		40	37	23	L	21	20	9	43	1.7	6.3	4.9	0.040				
6181		32	43	25	CL	23	22	10	44	0.7	6.3	5.1	0.037				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6178			12.5	10.3	3.7	0.4	26.9		38.2					70	1.1	10					
6179			9.1	8.5	0.6	0.4	18.6		33.8					55	0.2	2					
6180			12.5	12.1	0.6	0.3	25.5		37.0					69	0.2	2					
6181			9.4	9.3	0.4	0.3	19.4		28.2					69	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 18S-8 (A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (12.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6182		32	41	27	L	24	23	10	47	1.6	6.4	5.2	0.041				
6183		42	31	27	L	22	21	9	48	1.7	6.1	4.6	0.052				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6182			10.0	8.5	0.6	0.4	19.5		25.5					76	0.2	2					
6183			12.5	8.5	0.3	0.4	21.7		26.9					81	0.1	1					

Soil Series : ....
Soil Pit Nº : 19N-4 (A,B)

Soil Association : ....
Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (12.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6184		14	23	63	C	40	37	18	72	0.0	6.5	4.6	0.050				
6185		14	17	69	C	42	39	19	73	0.0	5.5	4.2	0.051				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6184			24.7	24.2	1.4	0.7	51.0		66.4					77	0.3	2					
6185			24.7	24.9	2.1	0.7	52.4		69.0					76	0.4	3					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 19N-8 (A,B,C) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6186		18	23	59	C	38	36	17	66	0.0	6.2	4.4	0.062				
6187		16	31	53	C	36	34	16	60	0.0	5.9	4.6	0.058				
6188		26	37	37	CL	28	27	12	56	0.4	58	4.5	0.039				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6186			19.1	18.8	0.8	0.5	39.2		52.3					75	0.2	2					
6187			21.6	21.9	1.4	0.5	45.4		62.3					73	0.3	2					
6188			17.5	17.5	2.0	0.4	37.4		48.0					78	0.5	4					

Soil Series : ....

Soil Pit Nº : 19S-2 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6190		20	37	43	C	31	29	13	59	0.0	7.6	4.8	0.086				
6191		36	41	23	L	21	20	9	47	1.3	8.2	6.0	0.142				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6190			18.1	13.9	0.6	0.4	33.0		41.0					80	0.2	1					
6191			19.1	13.4	1.7	0.3	34.5		40.7					85	0.4	4					

Soil Series : ....

Soil Pit Nº : ....19S - 8(A,B)..................

Soil Association : ....

Location : ......Numan..................

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6192		28	51	21	SiL	22	37	17	45	1.6	8.0	6.2	0.078				
6193		18	21	61	C	38	36	17	74	0.0	8.0	5.9	0.098				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6192			9.1	7.5	2.1	0.4	19.1		20.0					96	0.7	11					
6193			16.0	16.9	1.9	0.3	36.1		31.0					100	0.5	6					

Soil Series : ....

Soil Association : ....

Soil Pit Nº : 19S - 11(1,2,3,4)

Location : Numan

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity	pH		EC. X 10^3 mmhos/cm	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %		cm/hr	H2O (1:2.5)	KCl 1N (1:2.5)	(1:2.5)	C %	N %	C/N	O. M. %
6494		38	49	13	L	17	17	7	44	1.8	6.5	5.1	0.078				
6495		27	50	23	L/SIL	23	22	10	44	0.7	6.8	5.5	0.090				
6496		25	36	39	CL9	29	28	12	44	0.0	7.0	4.8	0.570				
6497		39	38	23	L	21	20	9	43	0.0	6.8	6.2	0.210				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6494			6.6	7.8	0.2	0.3	14.9		19.7					76	0.1	1					
6495			11.3	9.9	0.3	0.3	21.8		24.9					88	0.1	1					
6496			16.9	12.4	1.6	0.5	31.4		40.8					77	0.4	4					
6497			8.8	9.5	2.9	0.3	21.5		24.0					90	1.0	12					

Soil Series : ....

Soil Pit Nº : 20N - 1(1,2,3,4)

Soil Association : ....

Location : Numan

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity	pH		EC. X 10^3 mmhos/cm	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %		cm/hr	H2O (1:2.5)	KCl 1N (1:2.5)	(1:2.5)	C %	N %	C/N	O. M. %
6452		25	36	39	CL	29	28	12	46	0.0	6.5	4.5	0.052				
6453		23	26	51	C	34	32	15	44	0.0	7.2	5.5	0.108				
6454		21	32	47	C	33	31	14	53	0.0	6.5	4.4	0.056				
6455		37	34	29	CL	24	23	10	53	0.0	7.0	5.2	0.072				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	CaO	MgO	K_2O	P
	meq / 100g									meq / 100g								mg / 100			ppm
6452			13.2	11.9	0.5	0.3	25.9		39.7					65	0.1	1					
6453			18.2	15.4	1.4	0.5	35.5		41.9					85	0.3	3					
6454			14.1	13.4	1.0	0.5	29.0		39.7					73	0.3	3					
6455			10.6	8.4	0.9	0.2	20.1		23.8					84	0.3	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 20N-3 (A,B) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (1:2.5)	EC. X 10³ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6275		42	31	27	L	22	21	9	37	0.0	6.4	5.4	0.040				
6276		38	43	19	L	20	19	8	48	0.0	7.2	5.5	0.150				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	←	meq / 100g		→					←	mg/100	→	ppm
6275			16.1	8.2	1.7	0.2	26.7		30.9					86	0.5	6					
6276			12.2	5.1	1.7	0.2	19.2		26.2					73	0.6	6					

Soil Series : ....

Soil Pit Nº : 20N-8 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6277		21	32	47	C	33	31	14	53	0.0	7.6	4.5	0.094				
6278		27	28	45	C	31	29	13	49	0.0	6.5	4.3	0.124				
6279		37	26	37	CL	26	25	11	45	0.0	7.1	5.3	0.160				
6280		57	30	13	SL	14	14	5	30	0.7	7.3	5.6	0.110				

Lab. Nº	Fe	Al	Exchangeable cations Ca (meq / 100g)	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4 (meq / 100g)	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO (mg/100)	MgO	K_2O	P ppm
6277			19.1	18.9	0.5	0.9	39.4		51.0					77	0.1	1					
6278			13.1	13.6	1.9	0.4	29.0		40.6					71	0.5	5					
6279			12.8	11.9	1.5	0.4	26.6		31.3					85	0.4	5					
6280			9.4	5.6	0.7	0.2	15.9		18.1					88	0.3	4					

Soil Series : ....

Soil Pit Nº : 20S-4 (A,B,C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6270		41	28	31	CL	24	23	10	41	0.0	6.4	4.9	0.064				
6271		33	34	33	CL	26	25	11	36	0.0	6.8	4.7	0.064				
6272		23	34	43	C	31	29	13	47	0.0	6.0	5.5	0.074				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6270			19.4	9.3	tr	0.4	29.1		31.3					93	–	–					
6271			14.7	7.8	1.0	0.2	23.7		28.2					84	0.3	4					
6272			28.1	12.4	2.5	0.4	43.4		44.8					97	0.6	6					

Soil Series : ....

Soil Pit Nº : 20S-6 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6273		46	33	21	L	19	18	7	34	1.0	7.9	5.0	0.240				
6274		34	43	23	L	22	21	9	40	0.0	6.7	4.5	0.044				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6273			14.7	5.6	tr	0.2	20.5		23.0					89	–	–					
6274			14.4	7.0	0.4	0.2	22.0		24.7					89	0.1	2					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 21N-4 (I-II) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity cm/hr	pH		EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %			H2O (1:2.5)	KCl IN (12.5)		C %	N %	C/N	O. M. %
6286		39	8	53	C	32	30	14	52	0.0	6.7	4.5	0.080				
6287		15	34	51	C	35	33	15	58	0.0	6.2	4.6	0.082				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6286			30.0	20.2	1.5	0.4	52.1		54.5					96	0.3	3					
6287			25.6	18.5	1.6	0.4	46.1		48.7					95	0.3	3					

Soil Series : ....

Soil Pit Nº : ... 21N-6 (A,B,C) ...

Soil Association : ....

Location : ... NUMAN ...

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity	pH		EC X 10^3 mmhos/cm	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %		cm/hr	H2O (1:2.5)	KCl 1N (1:2.5)	(1: 2.5)	C %	N %	C/N	O. M. %
6288		15	20	55	C	31	29	13	48	0.7	5.7	4.3	0.096				
6289		21	20	59	C	37	35	16	61	0.0	5.4	4.4	0.054				
6290		15	16	69	C	42	39	19	61	0.0	6.0	4.4	0.054				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6288			30.0	21.2	0.4	0.5	52.1		56.8					92	0.1	1					
6289			29.4	21.8	1.8	0.6	53.0		58.0					91	0.4	3					
6290			31.9	22.2	1.3	0.6	56.0		61.5					91	0.3	2					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 21N-11 (A,B,C) Location : NUMAN

Lab. Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6291		17	18	65	C	40	37	18	58	0.0	6.3	4.3	0.080				
6292		15	18	67	C	41	38	18	61	0.0	5.5	4.4	0.106				
6293		23	8	69	C	40	37	18	74	0.0	7.5	5.4	0.370				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6291			30.6	24.3	1.2	0.6	56.7		65.0					87	0.2	2					
6292			28.8	22.8	2.0	0.8	54.4		60.3					90	0.4	3					
6293			37.8	25.7	1.9	0.5	65.9		71.9					92	0.3	3					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 21S-4 (A,B,C) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10³ mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6281		19	42	39	SiCL	30	28	13	49	0.0	6.5	4.9	0.052				
6282		21	34	45	C	32	30	14	53	0.0	6.5	4.6	0.100				
6283		27	30	43	C	30	28	13	55	0.0	6.0	4.9	0.054				

Lab. Nº	Fe (meq / 100g)	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4 (meq / 100g)	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO (mg/100)	MgO	K_2O	P ppm
6281			19.4	13.8	tr	0.4	33.6		41.8					80	-	-					
6282			20.6	15.2	0.8	0.3	36.9		40.6					91	0.2	2					
6283			19.4	13.6	0.3	0.4	33.7		42.9					79	0.1	1					

Soil Series: ....   Soil Association: ....

Soil Pit Nº: 21S-6 (I-II)   Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity	pH		E.C. X 10^3 mmhos/cm	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %		cm/hr	H2O (1:2.5)	KCl 1N (1:2.5)	(1:2.5)	C %	N %	C/N	O. M. %
6284		25	24	51	C	34	32	15	49	0.0	5.7	4.5	0.130				
6285		33	28	39	CL	28	27	12	43	0.0	6.9	5.3	0.102				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6284			19.4	14.6	1.0	0.4	35.4		50.0					71	0.2	2					
6285			10.0	10.5	1.2	0.3	22.0		37.5					68	0.4	4					

Soil Series : ....

Soil Pit Nº : 21S - 11(1,2,3,4)

Soil Association : ....

Location: Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6456		45	38	19	L	19	18	7	51	1.0	6.6	5.2	0.132				
6457		23	52	25	SIL	24	23	10	45	0.7	6.7	5.1	0.126				
6458		29	32	39	CL	28	27	12	40	0.0	6.9	5.1	0.090				
6459		38	29	33	CL	25	24	11	33	0.7	7.5	5.9	0.260				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6456			6.9	6.8	0.2	0.2	14.1		17.0					83	0.1	1					
6457			10.6	8.9	0.2	0.2	19.9		23.8					84	0.1	1					
6458			16.6	11.3	0.3	0.4	28.6		31.9					90	0.1	1					
6459			15.7	9.1	0.4	0.3	25.5		29.5					86	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 22N-3 (A,B) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6304		26	42	32	CL	26	25	11	42	0.0	6.9	4.8	0.078				
6305		25	33	42	C	30	28	13	43	0.0	6.9	5.0	0.047				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6304			14.4	9.3	0.4	0.3	24.4		27.8					88	0.1	1					
6305			19.1	11.1	0.1	0.3	30.6		33.6					91	0.0	0.0					

Soil Series : ....

Soil Pit Nº : 22N-5 (A,B,C,D)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6306		19	35	46	C	33	31	14	51	0.0	5.7	4.7	0.082				
6307		31	33	36	CL	27	26	12	45	0.0	7.2	5.2	0.175				
6308		19	39	42	C	31	29	13	46	0.0	7.0	5.7	0.280				
6309		17	26	56	C	37	35	16	55	0.0	8.1	6.0	0.250				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6306			23.8	14.6	0.4	0.4	39.2		51.0					77	0.5	1					
6307			13.1	7.8	1.6	0.3	22.8		26.7					85	0.5	6					
6308			20.3	11.9	2.3	0.4	34.9		39.8					88	0.6	6					
6309			24.4	13.8	3.0	0.3	41.5		42.9					97	0.7	7					

Soil Series: ....

Soil Pit Nº: 22S-3 (A,B)

Soil Association: ....

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6294		59	26	15	SL	15	15	6	37	1.1	7.1	5.3	0.047				
6295		77	4	19	SL	13	13	35	34	0.0	7.1	5.1	0.100				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6294			10.9	3.9	tr	0.2	15.0		17.4					86	–	–					
6295			12.7	6.2	0.9	0.3	19.6		20.9					94	0.3	4					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 22S-7 (A,B,C,D) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity cm/hr	pH		E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %			H2O (1:2.5)	KCl 1N (1:2.5)		C %	N %	C/N	O. M. %
6296		55	28	17	SL	16	16	6	49	0.8	5.9	4.5	0.114				
6297		25	34	41	C	30	28	13	45	0.0	6.3	4.7	0.080				
6298		57	22	21	SCL	17	17	7	45	0.0	6.1	5.1	0.060				
6299		41	20	39	CL	26	25	11	50	0.0	5.8	5.5	0.220				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6296			11.9	5.6	tr	0.3	17.8		20.9					85	-	-					
6297			22.6	13.6	tr	0.6	36.8		48.7					76	-	-					
6298			13.1	7.2	0.3	0.4	21.0		34.8					60	0.1	1					
6299			14.4	6.2	0.3	0.3	21.2		33.6					63	1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 22S-9 (A,B,C,D) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6300		57	8	35	SC/SCL	22	21	9	48	0.0	6.6	4.6	0.055				
6301		23	40	37	CL	29	28	12	54	0.0	7.0	4.7	0.054				
6302		45	14	41	SC/C	27	26	12	34	0.8	7.3	4.9	0.102				
6303		65	24	11	SL	12	12	4	34	1.0	7.2	5.0	0.080				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6300			21.3	14.4	0.3	0.4	36.4		40.6					90	0.1	1					
6301			27.5	15.2	0.4	0.3	38.4		46.4					83	0.1	1					
6302			18.1	16.6	0.1	0.2	35.0		38.2					92	0.0	0					
6303			4.7	4.1	0.4	0.1	9.3		15.1					62	0.2	3					

Soil Series : ....

Soil Pit Nº : 22S. - 12(1,2,3,4)

Soil Association : ....

Location : Numan

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Water Content: Moist. Equiv. %	1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6460		80	11	9	LS	9	9	3	37	2.4	6.9	5.9	0.175				
6461		75	14	11	SL	11	11	4	54	1.3	7.0	5.9	0.066				
6462		82	9	9	LS	9	9	3	49	2.0	7.2	6.1	0.062				
6463		90	7	3	S	5	6	1	58	2.9	7.6	6.4	0.076				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←	meq / 100g							→	←	meq / 100g		→					←	mg / 100	→	ppm
6460			6.3	3.7	0.1	0.5	10.6		11.3					94	0.0	1					
6461			6.9	1.7	0.1	0.3	9.0		11.3					80	0.1	1					
6462			4.4	3.1	0.1	0.2	7.8		9.1					86	0.1	1					
6463			3.8	1.2	0.1	0.2	5.3		4.5					100	0.1	2					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ...... 23N - 1(1,2,3,4) Location : .... Numan ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6464		24	33	43	C	31	29	13	55	0.0	7.1	4.8	0.072				
6465		28	27	45	C	31	29	13	45	0.0	7.2	5.2	0.104				
6466		24	33	43	C	31	29	13	54	0.0	7.6	6.9	0.190				
6467		18	29	53	C	35	13	15	76	0.0	8.1	6.9	0.380				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6464			20.0	17.7	0.8	1.0	39.5		48.7					81	0.2	2					
6465			19.7	15.4	1.8	0.8	37.7		41.9					90	0.4	4					
6466			25.0	13.6	-	0.7	39.3		39.7					99	-	-					
6467			27.5	15.4	0.1	0.5	43.5		46.5					94	-	-					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 23N - 4(A,B,C) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6320		21	31	48	C	33	31	14	54	0.0	6.0	4.5	0.110				
6321		15	23	62	C	39	37	17	66	0.0	6.3	4.8	0.026				
6322		9	27	64	C	41	38	18	83	0.0	6.5	5.3	0.054				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6320			23.5	20.6	0.6	0.6	45.3		51.8					87	0.1	1.0					
6321			24.1	20.2	1.7	0.5	46.5		52.7					88	0.4	3.0					
6322			26.3	21.4	2.1	0.6	50.4		58.3					86	0.4	4.0					

Soil Series : ....

Soil Pit Nº : 23N – 5(A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H_2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6323		9	25	66	C	42	39	19	66	0.0	6.6	5.4	0.086				
6324		49	21	30	SCL	22	21	9	41	0.0	7.5	5.6	0.260				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6323			26.0	22.2	2.5	0.4	51.1		56.5					90	0.5	4					
6324			11.0	9.7	1.3	0.3	22.3		23.9					93	0.4	5					

Soil Series : ....

Soil Pit Nº : 23S-4 (A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6310		33	35	32	CL	25	24	11	46	0.0	8.1	5.0	0.045				
6311		29	23	48	C	32	30	14	53	0.0	6.8	5.2	0.120				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6310			14.4	6.4	tr	0.3	21.1		23.2					91	–	–					
6311			23.1	10.5	0.3	0.3	34.2		38.3					89	0.1	1					

Soil Series : ...

Soil Pit Nº : 23S-8 (A,B,C,D)

Soil Association : ...

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	pH KCl IN (1:2.5)	E.C. X 10[3] mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6312		25	37	38	CL	29	28	12	49	0.0	7.7	4.8	0.056				
6313		23	31	46	C	32	30	14	46	0.0	6.8	4.5	0.062				
6314		43	31	26	L	21	20	9	35	0.0	6.2	4.5	0.086				
6315		41	31	28	CL	22	21	9	34	0.0	6.3	5.5	0.084				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6312			19.1	10.1	tr	0.3	29.5		38.3					77	--	–					
6313			16.6	10.9	0.3	0.3	28.1		41.7					67	0.1	1					
6314			9.4	5.1	0.7	0.2	15.4		18.6					83	0.3	4					
6315			10.0	6.0	2.2	0.2	18.4		22.0					84	0.8	10					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 23S – 11(A,B,C,D) Location : NUMAN

Lab. Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6316		83	7	10	LS	9	9	3	48	2.3	7.0	5.6	0.116				
6317		43	41	16	L	18	18	7	30	0.8	6.8	5.0	0.084				
6318		31	31	38	CL	28	27	12	45	0.0	6.5	4.6	0.060				
6319		53	17	30	SCL	21	20	9	52	0.0	6.7	4.5	0.044				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6316			5.9	1.7	tr	0.2	7.8		10.2					76	–	–					
6317			8.8	4.3	tr	0.2	7.8		16.3					81	–	–					
6318			17.8	9.7	0.2	0.3	28.0		31.6					89	0.1	1.0					
6319			10.3	6.4	0.1	0.2	17.0		22.7					75	0.0	0.0					

Soil Series : ....
Soil Pit Nº : 24N - 3(A,B,C)

Soil Association : ....
Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6325		13	35	52	C	36	34	16	54	0.0	7.2	4.9	0.118				
6326		13	21	66	C	41	38	18	58	0.0	6.2	5,1	0.054				
6327		27	25	48	C	32	30	14	47	0.0	7.2	5.6	0.100				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6325			21.6	20.8	0.8	0.7	43.9		46.8					94	0.2	2					
6326			26.0	20.2	3.1	0.5	49.8		52.5					95	0.6	6					
6327			15.0	13.6	2.4	0.4	31.4		38.6					81	0.6	6					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 24N - 4(A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (12.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6328		25	25	50	C	33	31	14	56	0.0	8.0	5.7	0.102				
6329		43	34	23	L	20	19	8	38	0.0	8.2	6.0	0.270				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←			meq / 100g					→	←	meq / 100g		→					←	mg / 100	→	ppm
6328			17.8	17.9	3.1	0.4	39.2		38.6					100	0.7	8					
6329			6.6	7.6	2.1	0.2	16.5		15.9					100	0.8	13					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 24S - 3(A,B,C) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H_2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6330		21	34	45	C	32	30	14	51	0.0	6.1	5.1	0.094				
6331		25	42	33	L	27	26	12	46	0.0	7.2	4.6	0.144				
6332		14	30	56	C	37	35	16	66	0.0	6.7	5.2	0.082				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6330			21.0	18.5	0.4	0.6	40.5		49.5					82	0.1	1					
6331			11.6	8.0	1.6	0.3	21.5		23.8					90	0.5	7					
6332			26.3	16.7	5.0	0.4	48.4		49.6					98	1.1	10					

Soil Series: ....

Soil Pit Nº: 24S - 9(A,B)

Soil Association: ....

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6333		46	22	32	SCL	23	22	10	48	0.0	6.5	4.6	0.045				
6334		24	30	46	C	32	30	14	46	0.0	7.2	5.0	0.043				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg/100		→	ppm
6333			13.5	8.4	0.5	0.3	22.7		23.8					95	0.2	2					
6334			19.1	12.1	1.4	0.3	32.9		35.1					94	0.4	4					

Soil Series : ....

Soil Pit Nº : 24S - 10(A,B,C,D) ....

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6335		48	18	34	SCL	24	23	10	50	0.0	6.4	5.1	0.132				
6336		42	22	36	CL	25	24	11	53	0.0	6.3	4.4	0.034				
6337		32	36	32	CL	25	24	11	39	0.0	6.1	4.4	0.048				
6338		38	40	22	L	21	20	9	40	0.9	6.3	4.5	0.600				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6335			17.8	15.2	tr	0.7	33.7		36.2					93	-	-					
6336			11.3	10.1	tr	0.3	21.7		26.0					83	-	-					
6337			10.6	9.3	0.1	0.2	20.2		24.5					82	-	-					
6338			8.8	6.2	0.1	0.2	15.3		19.2					80	-	-					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 24S – 13(A,B) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6339		44	24	32	CL	24	23	10	38	0.0	6.1	4.7	0.126				
6340		62	26	12	SL	13	13	5	30	0.0	6.8	5.2	0.104				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6339			16.3	11.1	0.1	0.3	27.8		33.3					83	–	–					
6340			4.7	0.2	0.2	0.0	5.1		11.3					45	0.1	2					

Soil Series : ....

Soil Pit Nº : 24S - 14(1,2,3,4)

Soil Association : ....

Location: Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6468		50	35	15	L	16	16	6	40	1.3	6.6	5.5	0.068				
6469		72	20	8	SL	10	10	4	40	3.6	6.8	5.8	0.047				
6470		68	22	10	SL	12	12	4	40	1.1	7.0	6.8	0.048				
6471		34	46	20	L	21	20	9	62	0.5	7.1	5.8	0.080				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g			→					← mg / 100		→	ppm
6468			9.7	7.0	-	0.4	17.1		20.4					84	-	-					
6469			4.1	4.9	0.1	0.4	9.5		11.3					84	0.1	1					
6470			5.0	0.0	0.1	0.2	5.3		9.1					58	0.1	1					
6471			10.3	8.0	1.8	0.6	20.7		21.1					98	0.6	9					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 24S – 17(A,B,C,D) .... Location : NUMAN ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6341		68	20	12	SL	12	12	4	42	0.9	7.0	6.0	0.185				
6342		70	22	8	SL	10	10	4	42	1.3	7.0	6.0	0.170				
6343		18	44	38	SiCL	30	28	13	45	0.0	6.9	5.7	0.144				
6344		26	38	36	CL	28	27	12	44	0.0	6.5	5.0	0.155				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←		meq / 100g						→	←	meq / 100g		→					←	mg / 100	→	ppm
6341			13.1	7.0	0.0	0.7	20.8		24.3					86	–	–					
6342			5.9	5.6	0.0	0.0	11.5		14.1					82	–	–					
6343			18.5	17.7	0.1	0.3	36.6		38.2					96	–	–					
6344			14.7	13.0	0.1	0.4	28.2		32.7					86	–	–					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 25N - 1(1,2,3,4) .... Location : Numan ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6472		12	22	66	C	41	38	18	71	0.0	6.1	4.3	0.074				
6473		10	18	72	C	44	41	20	81	0.0	7.1	5.5	0.108				
6474		12	16	72	C	43	40	19	66	0.0	7.1	6.1	0.270				
6475		14	14	72	C	43	40	19	81	0.0	8.0	6.2	0.102				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←			meq / 100g					→	←	meq / 100g		→					←	mg / 100	→	ppm
6472			19.7	20.2	1.7	0.8	42.4		53.2					80	0.4	3					
6473			25.0	22.2	2.5	0.6	50.3		61.1					82	0.5	4					
6474			25.0	21.4	3.5	0.5	50.4		61.1					82	0.7	6					
6475			26.0	21.4	4.1	0.5	52.0		55.5					94	0.8	7					

Soil Series : ....

Soil Pit Nº : 25N - 4(A,B,C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H_2O (1:2.5)	KCl IN (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6345		12	24	64	C	40	37	18	66	0.0	6.0	4.9	0.128				
6346		12	18	70	C	43	40	19	68	0.0	6.1	5.0	0.082				
6347		16	18	66	C	40	37	18	72	0.0	6.6	5.5	0.122				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E. C. P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6345			27.3	25.1	0.3	0.6	53.3		58.3					91	0.1	1					
6346			23.8	24.7	0.5	0.7	49.7		62.3					80	0.1	1					
6347			28.5	20.0	0.5	0.5	49.5		54.8					90	0.1	1					

Soil Series ....   Soil Association : ....

Soil Pit Nº : 25N – 11(A,B,C)   Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6348		14	24	62	C	39	37	17	62	0.0	5.9	4.8	0.116				
6349		14	18	68	C	42	39	19	60	0.0	6.2	5.0	0.104				
6350		12	42	46	SiC	34	32	15	50	0.0	7.3	5.6	0.220				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6348			32.2	25.5	0.4	0.8	58.9		62.3					95	0.1	1					
6349			28.5	20.4	0.7	0.8	50.4		61.2					82	0.1	1					
6350			19.1	13.0	0.7	0.4	33.2		35.1					95	0.2	2					

Soil Series : ...

Soil Pit Nº : 25S – 4(A,B)

Soil Association : ...

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (12.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6351		16	34	50	C	35	33	15	50	0.0	6.0	4.5	0.090				
6352		18	36	46	C	33	31	14	50	0.0	6.2	5.0	0.146				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6351			18.5	17.1	0.3	0.4	36.3		48.9					74	0.1	1					
6352			18.2	15.4	0.4	0.4	34.4		41.2					83	0.1	1					

Soil Series: ...

Soil Pit Nº: 25S – 11(A,B,C)

Soil Association: ...

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6353		24	34	42	C	30	28	13	47	0.0	7.5	5.7	0.210				
6354		34	34	32	CL	25	24	11	37	0.0	7.1	5.3	0.122				
6355		22	42	36	CL	29	28	12	46	0.0	6.6	5.0	0.086				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6353			21.0	10.5	0.9	0.2	32.6		34.0					96	0.2	3					
6354			12.5	8.6	0.4	0.2	21.7		26.0					83	0.1	2					
6355			14.1	11.1	0.3	0.3	25.8		27.8					93	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 25S – 15(A,B) .... Location : NUMAN ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl IN (1:2.5)	EC X 10^3 mmhos/cm (1:2,5)	Organic Fraction: C %	N %	C/N	O. M. %
6356		50	26	24	SCL	20	19	8	40	1.0	6.2	4.8	0.180				
6357		88	4	8	LS	8	9	3	35	1.5	6.4	5.1	0.116				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100 →			ppm
6356			7.8	6.6	0.2	0.3	14.9		15.9					94	0.1	1					
6357			0.9	1.2	0.2	0.1	2.4		5.7					42	0.2	4					

Soil Series: ....

Soil Pit Nº: 25S - 18(A,B,C,D,E)

Soil Association: ....

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6358		38	28	34	CL	25	24	11	46	0.0	6.1	5.1	0.136				
6359		28	34	38	CL	28	27	12	44	0.0	6.0	4.8	0.070				
6360		62	4	34	SCL	21	20	9	44	0.0	5.7	4.5	0.076				
6361		20	32	48	C	33	31	14	50	0.0	5.7	4.7	0.060				
6362		46	28	26	SCL/L	21	20	9	38	0.0	6.4	5.2	0.068				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←		meq / 100g						→	←	meq / 100g		→					←	mg / 100	→	ppm
6358			17.5	10.7	0.2	0.5	28.9		37.4					77	0.1	1					
6359			16.6	12.1	0.2	0.2	29.1		30.6					95	0.1	1					
6360			12.2	9.9	0.2	0.2	22.5		26.0					87	0.1	1					
6361			20.4	15.8	0.3	0.4	36.9		40.1					92	0.1	1					
6362			11.3	7.6	0.2	0.2	19.3		23.1					84	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ....25S - 24(1,2,3,4,5)....... Location: ....Numan.......

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H_2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6476		46	36	18	L	18	18	7	42	1.3	6.7	5.5	0.140				
6477		50	30	20	L	18	18	7	36	0.6	6.7	5.4	0.082				
6478		76	14	10	SL	10	10	4	38	1.2	6.9	5.5	0.047				
6479		30	38	32	CL	26	25	11	41	0.6	7.0	5.5	0.054				
6480		66	20	14	SL	13	13	5	37	1.5	6.7	5.6	0.046				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6476			10.3	6.8	0.1	0.5	17.7		20.4					87	–	–					
6477			11.3	6.0	–	0.2	17.5		21.5					81	–	–					
6478			8.1	6.6	0.1	0.2	15.0		15.9					94	–	1					
6479			9.7	8.2	0.2	0.3	18.4		19.3					95	0.1	1					
6480			6.3	5.8	1.2	1.1	14.4		16.3					88	0.5	7					

Soil Series : ....

Soil Pit Nº : 26N - 3(A,B,C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6363		19	25	56	C	36	34	16	54	0.0	5.6	4.2	0.080				
6364		15	25	60	C	38	36	17	58	0.0	5.9	4.9	0.090				
6365		41	32	27	L	22	21	9	41	0.0	7.5	5.8	0.290				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6363			22.5	22.6	0.3	0.4	45.8		52.6					87	0.1	1					
6364			21.3	21.2	2.9	0.4	45.8		56.6					81	0.6	5					
6365			10.6	9.5	3.5	0.2	23.8		23.1					100	1.1	15					

Soil Series : ....
Soil Pit Nº : 26N – 8(A,B)

Soil Association : ....
Location : NUMAN

Lab Nº	Depth (cm)	Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	Water Content 15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	pH KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	C %	N %	C/N	O. M. %
6366		7	15	78	C	46	43	21	81	0.0	7.0	5.7	0.270				
6367		13	23	64	C	40	37	18	64	0.0	7.4	6.0	0.290				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6366			29.1	24.5	6.4	0.8	60.8		57.6					100	1.2	11					
6367			25.0	22.4	6.0	0.5	53.9		56.6					95	1.2	11					

Soil Series : ....

Soil Pit Nº : 26N – 9(A,B,C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6368		21	13	66	C	40	37	18	69	0.0	6.0	4.6	0.150				
6269		9	17	74	C	45	42	20	78	0.0	6.3	5.2	0.090				
6370		13	33	54	C	37	35	16	62	0.0	7.3	5.8	0.440				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g →								← mg / 100 →			ppm
6368			23.5	25.1	1.3	1.0	50.9		63.4					80	0.3	2					
6369			23.5	23.9	4.6	1.0	53.0		61.1					87	0.9	8					
6370			16.3	18.3	6.8	0.5	41.9		45.3					92	1.6	15					

Soil Series : ....

Soil Association : ....

Soil Pit Nº : 26S – 3(A,B,C)

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6371		8	27	65	C	41	38	18	66	0.0	5.8	4.5	0.160				
6372		7	23	70	C	43	40	19	56	0.0	5.8	4.6	0.110				
6373		8	17	75	C	45	42	20	67	0.0	5.7	4.6	0.165				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6371			23.8	25.1	1.0	0.4	50.3		61.1					82	0.2	2					
6372			23.8	23.9	2.7	0.5	50.9		60.0					85	0.6	5					
6373			24.1	23.9	3.0	0.5	51.5		58.9					87	0.6	5					

Soil Series : ....

Soil Pit Nº : 26S - 9(A,B,C)

Soil Association : ....

Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6374		20	29	51	C	34	32	15	50	0.0	5.0	3.8	0.110				
6375		25	23	49	C	32	30	14	54	0.0	5.7	4.5	0.094				
6376		81	4	15	SL	11	11	4	30	0.9	6.2	4.8	0.100				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6374			13.2	14.8	0.3	0.8	29.1		48.7					60	0.1	1					
6375			15.0	15.2	1.0	0.2	31.4		38.5					82	0.3	3					
6376			4.7	3.9	0.1	0.1	8.8		12.5					70	0.1	1					

Soil Series : ...

Soil Pit Nº : 26S - 13(A,B)

Soil Association : ...

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6377		37	33	30	CL	24	23	10	42	0.0	6.4	4.8	0.128				
6378		53	31	16	SL	16	16	6	34	0.0	7.0	5.9	0.160				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6377			8.8	8.2	1.6	0.2	18.8		21.5					87	0.6	7					
6378			4.4	7.2	1.2	0.1	12.9		14.1					91	0.5	9					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 26S -18(A,B,C) .... Location: NUMAN ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6379		17	39	44	C	32	30	14	48	0.0	6.0	4.7	0.074				
6380		13	33	54	C	37	35	16	57	0.0	6.2	5.6	0.082				
6381		24	41	35	CL	28	27	12	43	0.0	7.0	5.7	0.106				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6379			18.2	16.9	0.6	0.4	36.1		45.3					80	0.1	1					
6380			20.7	19.4	1.4	0.5	42.0		47.6					88	0.3	3					
6381			13.2	12.1	0.8	0.3	26.4		27.2					97	0.2	3					

Soil Series : ...

Soil Pit Nº : 26S - 21(1,2,3,4)

Soil Association : ...

Location : Numan

Lab Nº	Depth (cm)	Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	Water Content 15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	pH KCl 1N (1:2.5)	EC. X 10³ mmhos/cm (1:2.5)	C %	N %	C/N	O. M. %
6481		42	32	26	L	22	21	9	44	0.0	7.0	5.5	0.150				
6482		41	32	27	L	22	21	9	38	0.0	7.4	6.0	0.140				
6483		18	36	46	C	33	31	14	45	0.0	8.5	6.5	0.410				
6484		14	34	52	C	36	34	16	53	0.0	8.5	6.5	0.520				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO₄	Cl	CO₃	HCO₃	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K₂O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6481			10.3	8.2	0.8	1.0	20.3		26.1					78	0.3	3					
6482			17.8	15.2	1.6	0.1	34.7		35.1					99	0.4	5					
6483			23.8	13.6	6.8	0.4	44.6		37.4					100	1.6	18					
6484			21.3	13.2	8.3	0.4	43.2		43.1					100	2.0	19					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 26S - 25(A,B,C) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6382		22	53	25	SiL	24	23	10	53	0.0	6.6	5.5	0.074				
6383		72	15	13	SL	12	12	4	30	1.7	6.5	5.3	0.150				
6384		25	36	39	CL	29	28	12	43	0.0	6.5	5.3	0.150				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6382			14.4	11.7	-	0.4	26.5		34.0					78	-	-					
6383			3.1	5.4	-	0.1	8.6		10.2					84	-	-					
6384			12.8	12.1	0.1	0.2	25.2		29.5					85	-	-					

Soil Series : ....

Soil Pit Nº : 27N - 1(1,2,3,4,5)

Soil Association : ....

Location : Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6485		32	30	38	CL	28	27	12	50	0.0	6.2	4.6	0.110				
6486		26	28	46	C	31	29	13	57	0.0	6.1	4.5	0.092				
6487		32	32	36	CL	27	26	12	41	0.0	6.6	5.0	0.098				
6488		48	28	24	SCL/C	20	19	8	42	0.0	7.1	5.7	0.205				
6489		58	30	12	SL	14	14	5	37	1.8	7.4	6.0	0.150				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6485			15.7	13.6	0.4	0.6	30.3		39.7					76	0.1	1					
6486			16.3	14.4	0.8	0.6	32.1		43.1					74	0.2	2					
6487			13.8	11.3	0.8	0.5	26.4		28.3					93	0.2	3					
6488			10.0	7.8	0.7	0.4	18.9		19.3					98	0.2	4					
6489			5.6	6.8	0.5	0.2	13.1		16.3					80	0.2	3					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 27N - 7(A,B) Location: NUMAN

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity	pH		E.C. X 10^3 mmhos/cm	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %		cm/hr	H2O (12.5)	KCl 1N (12.5)	(1: 2.5)	C %	N %	C/N	O. M. %
6385		88	9	3	S	6	7	2	31	2.9	6.7	5.9	0.120				
6386		84	1	15	SL	11	11	4	34	3.0	6.4	5.2	0.076				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6385			3.8	3.9	-	0.2	7.9		9.1					87	-	-					
6386			5.0	3.3	0.1	0.3	8.7		12.5					70	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 27N - 11(A,B,C) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10³ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6387		48	25	27	SCL	21	20	9	39	0.5	7.0	6.2	0.180				
6388		34	25	41	C	28	27	12	47	0.0	8.0	6.5	0.390				
6389		30	27	43	C	30	28	13	58	0.0	8.2	6.4	0.560				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO$_4$	Cl	CO$_3$	HCO$_3$	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K$_2$O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6387			16.3	9.5	0.4	0.5	26.7		27.2					98	0.1	1					
6388			17.8	10.3	4.2	0.3	32.6		31.0					100	1.1	14					
6389			12.8	16.3	6.8	0.4	36.3		36.2					100	1.8	19					

Soil Series : ....

Soil Pit Nº : 27N - 12(A,B)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6390		28	19	53	C	34	32	15	96	0.0	8.4	6.8	0.540				
6391		32	25	43	C	30	28	13	62	0.0	8.1	6.5	0.540				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6390			8.8	22.4	17.4	0.3	48.9		44.2					100	4.4	39					
6391			11.0	15.2	12.2	0.3	38.7		34.0					100	3.4	36					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ....27S - 4(A,B)................. Location: ......NUMAN..........................

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (1:2.5)	E.C. X 10³ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6392		14	39	47	C	34	32	15	60	0.0	5.7	4.4	0.146				
6393		10	31	59	C	39	37	17	52	0.0	5.9	4.8	0.116				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq/100g			→					← mg/100		→	ppm
6392			20.4	25.1	0.5	0.4	46.4		56.6					82	0.1	1					
6393			21.3	20.6	1.6	0.3	43.8		51.0					86	0.4	3					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 27S - 8 (A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6394		18	45	37	SiCL	29	28	12	50	0.0	7.7	6.0	0.250				
6395		18	35	47	C	33	31	14	54	0.0	7.7	6.0	0.420				

Lab. Nº	Fe	Al	Exchangeable cations (meq / 100g): Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions (meq / 100g): SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients (mg / 100): CaO	MgO	K_2O	P ppm
6394			15.0	12.6	4.6	0.2	32.4		34.0					95	1.2	14					
6395			21.9	16.3	6.3	0.3	44.8		49.8					90	1.4	13					

Soil Series : ....

Soil Pit Nº : 27S - 11(A,B,C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl IN (12.5)	E.C. X 10³ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6396		24	31	45	C	31	29	13	60	0.0	6.2	4.4	0.064				
6397		22	25	53	C	35	33	15	53	0.0	6.8	4.4	0.072				
6398		92	5	3	S	5	6	1	34	1.2	6.4	4.7	0.086				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6396			16.3	17.7	1.3	0.3	35.6		39.8					89	0.3	3					
6397			15.7	13.0	2.2	0.3	31.2		36.5					85	0.6	6					
6398			1.4	1.3	0.4	0.0	3.1		4.5					69	0.3	9					

Soil Series : .... Soil Association : ....

Soil Pit Nº : ....27S - 16(1,2,3,4)........ Location : .... Numan ....

Lab. Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H20 (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6490		16	31	53	C	36	34	16	50	0.0	6.5	4.7	0.106				
6491		22	20	58	C	37	35	16	68	0.0	6.9	5.1	0.130				
6492		18	24	58	C	37	35	16	66	0.0	7.6	5.8	0.112				
6493		52	22	26	SCL	20	19	8	42	0.0	7.4	5.5	0.084				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g			→					← mg / 100		→	ppm
6490			19.7	16.5	1.1	0.7	38.0		47.6					80	0.3	2					
6491			21.3	16.9	2.0	0.8	41.0		49.9					82	0.5	4					
6492			22.2	16.9	1.6	0.7	41.4		42.6					97	0.4	4					
6493			11.0	9.5	1.1	0.4	22.9		44.0					95	0.3	5					

Soil Series : ....

Soil Pit Nº : 27S - 21(A,B,C)

Soil Association : ....

Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6399		24	31	45	C	31	29	13	54	0.0	6.3	4.5	0.062				
6400		26	19	55	C	35	33	15	58	0.0	6.1	4.5	0.114				
6401		64	21	15	SL	14	14	5	38	1.7	6.2	5.1	0.088				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6399			17.5	16.3	0.3	0.3	34.4		37.6					91	0.1	1					
6400			16.9	17.3	0.5	0.5	35.2		49.8					71	0.1	1					
6401			3.1	4.1	0.1	0.2	7.5		11.3					66	0.1	1					

Soil Series : .... Soil Association : ....

Soil Pit Nº : 27S - 23(A,B) Location : NUMAN

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6402		14	29	57	C	37	35	16	64	0.0	6.5	5.5	0.049				
6403		74	13	13	SL	12	12	4	58	0.0	6.3	6.0	0.086				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	←	meq / 100g							→	← meq / 100g			→					← mg / 100		→	ppm
6402			19.4	18.9	1.0	0.5	39.8		46.4					86	0.2	2					
6403			19.1	17.7	1.0	0.5	38.3		48.7					79	0.2	2					

Soil Series : ....

Soil Pit №: ....275 - 28(A,B,C)........

Soil Association : ....

Location : ....NUMAN........

Lab №	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	pH KCl 1N (12.5)	EC. X 10³ mmhos/cm (12.5)	Organic Fraction: C %	N %	C/N	O. M. %
404		46	27	27	SCL	21	20	9	42	2.3	6.1	5.5	0.064				
05		16	27	57	C	37	35	16	47	0.0	6.0	5.0	0.098				
5		54	33	13	SL	15	15	6	41	1.5	7.1	5.4	0.041				

Al	Exchangeable cations (meq / 100g): Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions (meq / 100g): SO_4	Cl	CO_3	HCO_3	Derived Values %: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients (mg/100): CaO	MgO	K_2O	P ppm
	5.6	7.8	–	0.4	13.8		18.6					74	–	–					
	6.6	7.4	0.1	0.4	14.5		17.0					85	0.1	1					
	7.5	6.4	–	0.4	14.3		15.8					91	–	–					

Soil Series : .... Soil Association : ...... Backswamp ....

Soil Pit Nº : .... L1 - 1(A,B,C,D,E,F) .... Location : .... Numan ....

Lab Nº	Depth (cm)	Soil Separates			Texture Class	Moist. Equiv. %	Water Content		Saturation percentage	Hydraulic conductivity	pH		E.C. X 10^3 mmhos/cm	Organic Fraction			
		Sand %	Silt %	Clay %			1/3 bar %	15 bar %		cm/hr	H2O (1:2.5)	KCl 1N (1:2.5)	(1: 2.5)	C %	N %	C/N	O. M. %
6498		20	25	55	C	36	34	16	76	0.0	6.8	5.0	0.106				
6499		24	19	57	C	36	34	16	72	0.0	8.0	6.1	0.110				
6500		22	20	58	C	37	35	16	78	0.0	8.1	6.3	0.320				
6501		28	14	58	C	37	35	16	76	0.0	8.4	6.4	0.180				
6502		26	16	58	C	36	34	16	86	0.0	8.4	6.5	0.280				
6503		26	22	52	C	34	32	15	75	0.0	8.5	6.6	0.250				

Lab. Nº	Fe	Al	Exchangeable cations				Total Ext. Bases	Extract Acidity	C. E. C.	Anions				Derived Values				Available Nutrients			
			Ca	Mg	Na	K				SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6498			25.0	26.1	4.1	0.9	56.1		63.5					88	0.8	6					
6499			26.0	27.0	6.5	1.2	60.7		63.5					96	1.3	10					
6500			21.3	28.8	10.3	1.4	61.8		61.2					100	2.1	17					
6501			23.2	28.8	9.5	1.3	62.8		62.3					100	1.9	15					
6502			21.3	31.3	11.7	1.4	76.7		61.2					100	2.3	19					
6503			19.4	35.0	11.7	1.2	67.3		49.9					100	2.2	23					

Soil Series : ....

Soil Pit Nº : L1 - 2(A,B,C,D,E,F)

Soil Association : Backswamp

Location : Numan

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6504		14	18	68	C	42	39	19	90	0.0	6.9	5.3	0.110				
6505		16	14	70	C	42	39	19	89	0.0	8.0	6.2	0.580				
6506		14	12	74	C	44	41	20	84	0.0	8.2	6.4	0.250				
6507		16	12	72	C	43	40	19	94	0.0	8.0	6.4	0.150				
6508		14	14	72	C	43	40	19	98	0.0	8.1	6.4	0.560				
6509		12	16	72	C	43	40	19	92	0.0	8.4	6.5	0.280				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6504			30.7	41.2	5.2	1.4	78.5		81.9					96	0.9	6					
6505			31.3	39.1	6.5	2.4	79.3		79.3					100	1.1	8					
6506			29.4	40.3	11.1	3.0	83.8		73.7					100	1.9	15					
6507			29.1	40.7	12.2	2.9	84.9		79.3					100	2.1	15					
6508			27.9	39.9	13.7	2.7	84.2		79.3					100	2.4	17					
6509			27.5	41.2	11.4	2.6	82.7		79.3					100	1.9	14					

Soil Series : ...

Soil Pit Nº : L1 - 3(A,B,C,D,E,F)

Soil Association : Backswamp

Location : Numan

Lab Nº	Depth (cm)	Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	Water Content 15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	pH KCl IN (1:2.5)	E.C. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6510		32	14	54	C	34	32	15	93	0.0	7.7	5.1	0.120				
6511		30	12	58	C	35	33	15	66	0.0	6.9	5.8	0.130				
6512		32	12	56	C	34	32	15	94	0.0	8.1	6.2	0.540				
6513		34	14	52	C	32	30	14	82	0.0	8.3	6.5	0.410				
6514		32	14	54	C	34	32	15	98	0.0	8.2	6.5	0.580				
6515		26	18	56	C	35	33	15	98	0.0	8.7	6.7	0.350				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E. C. P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g →								← mg / 100 →			ppm
6510			22.2	23.2	3.5	0.8	49.7		58.9					84	0.7	6					
6511			23.2	25.5	5.7	1.1	55.5		56.7					98	1.2	10					
6512			24.4	27.0	10.6	1.8	63.8		56.7					100	2.1	19					
6513			20.0	27.0	11.7	1.0	59.7		52.1					100	2.4	22					
6514			21.9	30.9	10.3	1.2	64.3		54.4					100	2.0	19					
6515			21.3	36.2	12.0	0.9	70.4		54.4					100	2.2	22					

Soil Series : ....

Soil Pit Nº : L1 - 4(A,B,C,D,E,F)

Soil Association : Backswamp

Location : Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC X 10^3 mmhos/cm (1: 2.5)	Organic Fraction C %	N %	C/N	O. M. %
6516		30	16	54	C	34	32	15	58	0.0	8.7	4.6	0.070				
6517		34	10	56	C	34	32	15	77	0.0	6.8	5.09	0.080				
6518		42	10	48	C	30	28	13	72	0.0	6.8	6.0	0.230				
6519		44	12	44	C	28	27	12	78	0.0	7.7	6.5	0.320				
6520		40	14	46	C	29	28	12	87	0.0	8.2	6.6	0.460				
6521		32	16	52	C	33	31	14	86	0.0	8.3	6.6	0.300				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6516			23.8	23.9	3.5	0.7	51.9		64.6					87	0.7	5					
6517			21.3	23.3	4.6	0.8	50.0		55.5					90	1.0	8					
6518			20.0	21.8	8.4	0.9	51.1		46.5					100	1.8	18					
6519			18.2	23.3	7.4	0.9	49.8		43.1					100	1.6	17					
6520			18.2	25.5	9.5	0.8	54.0		46.5					100	2.0	20					
6521			17.5	27.6	11.7	0.8	57.6		51.0					100	2.5	23					

Soil Series : ....

Soil Pit Nº : L2 - 1(A,B,C,D,E,F)

Soil Association : Backswamp

Location : Numan

Lab Nº	Depth (cm)	Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	Water Content 15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	pH KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	C %	N %	C/N	O. M. %
6522		14	14	72	C	43	40	19	86	0.0	8.5	5.2	0.100				
6523		12	10	78	C	46	43	21	98	0.0	7.2	5.6	0.520				
6524		13	15	72	C	43	40	19	98	0.0	7.0	5.2	0.190				
6525		15	13	72	C	43	40	19	97	0.0	7.4	5.8	0.450				
6526		14	18	68	C	42	39	19	97	0.0	7.2	5.8	0.430				
6527		22	8	70	C	41	38	18	98	0.0	8.2	6.8	0.920				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6522			31.3	46.1	3.7	1.4	82.5		82.7					100	0.6	4					
6523			32.6	46.9	10.0	2.3	91.8		88.4					100	1.6	11					
6524			31.3	44.4	7.0	1.9	84.6		88.4					96	1.2	8					
6525			29.4	42.4	10.6	2.1	84.5		83.8					100	1.8	13					
6526			34.1	46.9	11.7	2.2	94.9		82.7					100	1.8	14					
6527			28.8	28.4	8.7	1.6	67.5		73.6					92	1.6	12					

Soil Series : .... L2 - 2(A,B,C,D,E,F) ....

Soil Pit № : ....

Soil Association : ...... Backswamp ......

Location : ...... Numan ......

Lab №	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6528		12	16	72	C	43	40	19	98	0.0	8.3	5.8	0.400				
6529		48	20	32	C	23	22	10	86	0.0	7.0	6.5	0.470				
6530		16	12	72	C	43	40	19	97	0.0	8.2	6.4	0.350				
6531		12	18	70	C	43	40	19	97	0.0	7.7	5.5	0.390				
6532		10	14	76	C	45	42	20	96	0.0	6.9	5.7	0.170				
6533		20	8	72	C	42	39	19	99	0.0	7.3	6.1	1.850				

Lab. №	Fe	Al	Exchangeable cations (meq / 100g): Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions (meq / 100g): SO_4	Cl	CO_3	HCO_3	Percent Base Saturation	Derived Values: S.A.R.	E. S. P.	E.C.P.	Available Nutrients (mg / 100g): CaO	MgO	K...
6528			29.1	46.9	9.5	1.8	87.3		83.8					100	1.5	11				
6529			11.6	12.8	7.9	0.6	32.9		30.6					100	2.3	26				
6530			28.2	45.3	13.1	1.7	88.3		87.2					100	2.2	15				
6531			31.3	47.7	26.1	1.7	106.8		87.2					100	4.2	30				
6532			31.3	46.9	29.5	1.6	109.3		92.9					100	4.7	32				
			39.4	42.8	44.6	1.6	118.4		79.3					100	7.4	56				

Soil Series : ....

Soil Pit Nº : L2 - 3(A,B,C,D,E,F)

Soil Association : Backswamp

Location : Numan

Lab. Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	E.C. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6534		16	16	68	C	41	38	18	85	0.0	6.8	5.2	0.102				
6535		13	15	72	C	43	40	19	81	0.0	7.2	5.5	0.096				
6536		21	99	70	C	41	38	18	89	0.0	7.5	6.2	1.300				
6537		27	13	60	C	36	34	16	72	0.0	6.6	5.8	0.660				
6538		11	14	75	C	45	42	20	94	0.0	6.7	5.9	0.820				
6539		13	12	75	C	44	41	20	95	0.0	6.9	5.8	0.340				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6534			25.0	43.4	0.8	1.4	70.6		86.1					82	0.1	1					
6535			27.2	34.3	0.7	1.0	63.2		99.7					63	0.1	1					
6536			23.8	45.8	2.8	1.4	73.8		75.9					97	0.5	4					
6537			29.4	36.8	2.2	1.2	69.6		60.1					100	0.4	4					
6538			23.8	41.3	2.3	2.2	69.6		80.4					87	0.4	3					
6539			37.3	42.4	3.2	1.8	84.7		83.8					100	0.5	4					

Soil Series : ....

Soil Pit Nº : ..... L2 - 4(A,B,C,D,E,F) ......

Soil Association : .... Backswamp ....

Location : .... Numan ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H20 (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6540		13	18	69	C	42	39	19	86	0.0	7.0	6.6	4.400				
6541		13	4	83	C	47	44	21	99	0.0	7.2	7.1	1.300				
6542		17	6	77	C	44	41	20	100	0.0	8.2	7.1	0.560				
6543		11	16	73	C	44	41	20	68	0.0	8.5	4.6	0.100				
6544		11	12	77	C	45	42	20	99	0.0	6.6	5.0	0.100				
6545		11	8	81	C	47	44	21	78	0.0	6.6	5.8	0.170				

Lab. Nº	Fe (meq / 100g)	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4 (meq / 100g)	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E. C. P.	Available Nutrients: CaO (mg/100)	MgO	K_2O	P ppm
6540			23.8	32.9	2.0	1.1	59.8		85.0					70	0.4	2					
6541			23.2	39.1	3.0	1.1	66.4		81.6					81	0.5	4					
6542			30.4	44.0	2.4	1.1	77.9		82.7					94	0.4	3					
6543			22.5	28.4	0.7	1.3	52.9		88.4					60	0.1	1					
6544			23.8	27.6	0.7	1.2	53.3		89.5					60	0.1	1					
6545			22.5	47.7	1.3	1.2	72.7		81.6					89	0.2	2					

Soil Series : ....

Soil Pit Nº : .... L3 - 1(A,B,C,D,E,F) ....

Soil Association : ...... Backswamp ....

Location .... Numan ....

Lab. Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H_2O (1:2.5)	KCl 1N (1:2.5)	EC. $\times 10^3$ mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6546		22	20	58	C	37	35	16	62	0.0	7.5	4.4	0.078				
6547		12	10	78	C	46	43	21	95	0.0	6.8	5.5	0.150				
6548		18	20	62	C	39	37	17	88	0.0	7.2	6.1	0.380				
6549		20	14	66	C	40	37	18	84	0.7	7.3	5.8	1.300				
6550		10	18	72	C	44	41	20	57	0.0	6.8	5.8	1.400				
6551		14	14	72	C	43	40	19	75	0.0	6.7	6.0	0.280				

Lab. Nº	Fe (meq/100g)	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions (meq/100g): SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients (mg/100): CaO	MgO	K_2O	P ppm
6546			20.0	35.8	0.7	1.0	57.5		71.4					81	0.1	1					
6547			25.7	42.8	1.5	2.1	72.1		87.2					83	0.3	2					
6548			21.3	39.1	1.6	1.2	63.2		68.0					93	0.3	2					
6549			22.5	42.8	1.5	1.2	68.0		71.4					95	0.3	2					
6550			23.8	45.3	2.3	1.3	72.7		77.0					94	0.4	3					
6551			21.9	43.2	2.2	1.3	68.6		80.4					85	0.4	3					

Soil Series : ......

Soil Pit Nº : L3 - 2(A,B,C,D,E,F)

Soil Association : Backswamp

Location : Numan

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6552		10	20	70	C	43	40	19	78	0.0	6.9	5.3	0.280				
6553		16	12	72	C	43	40	19	78	0.0	7.3	5.7	0.660				
6554		18	10	72	C	42	39	19	66	0.0	7.9	5.8	0.700				
6555		10	20	70	C	43	40	19	72	0.0	7.0	5.7	3.400				
6556		12	12	76	C	45	43	20	79	0.0	7.2	6.0	2.500				
6557		10	8	82	C	47	44	21	74	0.0	7.4	6.3	1.100				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6552			23.8	40.6	1.2	1.3	66.9		83.8					80	0.2	1					
6553			23.2	42.2	1.8	1.3	68.5		82.7					83	0.3	2					
6554			21.9	42.8	2.3	1.4	68.4		96.3					71	0.4	2					
6555			28.2	42.2	3.0	2.2	75.6		83.3					91	0.5	4					
6556			26.3	43.2	2.9	2.3	74.7		83.8					89	0.5	3					
6557			19.7	45.3	3.4	1.4	69.8		86.1					81	0.6	4					

Soil Series : ....

Soil Pit Nº : L3 - 3(A,B,C,D,E,F)

Soil Association : Backswamp

Location : Numan

Lab. Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1: 2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6558		15	25	60	C	38	36	17	74	0.0	7.5	5.2	0.140				
6559		15	7	78	C	45	42	20	55	0.0	7.3	5.5	0.130				
6560		10	12	78	C	46	43	21	86	0.0	8.0	5.9	0.240				
6561		10	10	80	C	47	44	21	88	0.0	6.3	6.2	1.020				
6562		42	20	38	C	26	25	11	46	0.0	6.2	6.0	0.48				
6563		14	10	76	C	45	42	20	98	0.0	6.7	6.7	0.820				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6558			23.2	45.8	1.5	1.2	71.7		90.6					79	0.3	2					
6559			21.0	46.4	1.3	1.0	59.7		69.1					86	0.2	2					
6560			20.4	36.0	0.5	1.0	57.9		69.1					84	0.1	1					
6561			22.5	24.7	1.6	1.4	50.2		87.2					58	0.3	2					
6562			21.3	23.7	2.3	1.3	48.6		86.1					56	0.5	3					
6563			10.0	18.9	2.1	0.8	31.8		42.3					74	0.6	5					

Soil Series : ....

Soil Pit Nº : .... L3 - 4(A,B,C,D,E,F) ......

Soil Association : ..... Backswamp ....

Location .... Numan ....

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6564		13	15	72	C	43	40	19	74	0.0	8.0	4.8	0.100				
6565		11	13	76	C	45	42	20	67	0.0	7.8	4.5	0.120				
6566		8	10	82	C	48	45	22	83	0.0	8.1	5.5	0.330				
6567		9	7	84	C	48	45	22	90	0.0	7.3	6.7	0.900				
6568		17	12	71	C	42	39	19	69	0.0	7.3	6.3	0.320				
6569		15	8	77	C	45	42	20	86	0.0	6.5	6.8	0.760				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6564			17.2	27.8	2.5	1.3	48.8		81.6					60	0.5	3					
6565			21.9	25.7	0.7	1.4	49.7		95.2					52	0.1	1					
6566			19.4	29.8	1.0	1.2	51.4		90.6					57	0.2	1					
6567			20.4	22.1	1.9	1.2	45.6		94.0					49	0.4	2					
6568			18.5	26.6	2.6	1.0	48.7		79.3					61	0.6	3					
6569			23.2	26.8	1.0	1.0	52.0		74.8					70	0.2	1					

Soil Series : ....
Soil Pit Nº : .... L4 - 1(A,B,C,D,E,F) ....
Soil Association : .... Backswamp ....
Location : .... Numan ....

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6570		14	21	65	C	40	37	18	90	-	7.2	5.2	0.120				
6571		14	19	67	C	41	38	18	85	0.0	6.8	5.3	0.072				
6572		13	18	69	C	42	39	19	76	0.0	7.0	5.4	0.074				
6573		12	17	71	C	43	40	19	59	0.0	7.2	5.6	0.130				
6574		12	8	80	C	46	43	21	54	0.0	7.3	6.2	0.640				
6575		16	8	76	C	44	41	20	70	0.0	8.0	6.0	0.200				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E.S.P.	E.C.P.	Available N…: CaO	MgO
	←		meq / 100g					→		← meq / 100g →								— mg / 10…	
6570			34.4	40.7	4.6	0.4	80.1		96.3					83	0.8	5			
6571			28.8	42.4	2.6	0.4	74.2		83.8					89	0.4	3			
6572			33.2	43.2	2.2	0.4	79.0		74.8					100	0.4	3			
6573			30.7	42.0	5.6	0.3	78.6		92.9					85	0.9	6			
6574			32.6	43.6	6.7	0.4	83.3		92.9					90	1.1	7			
6575			29.4	42.4	8.1	0.4	80.3		90.6					89	1.4	9			

Soil Series : ....

Soil Pit Nº : L4 - 2(A,B,C,D,E,F)

Soil Association : Backswamp

Location : Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl 1N (1:2.5)	EC X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6576		12	20	68	C	42	39	19	82	0.0	8.1	5.0	0.220				
6577		13	15	72	C	43	40	19	98	0.0	6.6	5.2	0.130				
6578		11	13	76	C	45	42	20	89	0.0	6.9	5.3	0.260				
6579		11	9	80	C	46	43	21	89	0.0	7.5	6.1	0.360				
6580		9	9	82	C	47	44	21	90	0.0	7.7	6.5	1.220				
6581		11	11	78	C	46	43	21	91	0.0	7.3	6.6	3.500				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g								→	← meq / 100g			→					← mg / 100		→	ppm
6576			30.7	43.2	2.0	0.4	76.3		90.6					84	0.3	2					
6577			31.3	43.2	2.2	0.5	77.2		92.9					83	0.4	2					
6578			32.2	43.2	3.5	0.5	79.4		91.8					86	0.6	4					
6579			33.8	43.6	8.2	0.5	86.1		92.9					93	1.3	9					
6580			29.4	49.0	11.7	0.5	90.6		92.9					98	1.9	13					
6581			26.0	49.4	15.2	0.4	91.9		90.6					100	2.5	17					

Soil Series : ....

Soil Pit Nº : L4 - 3(A, B, C, D, E, F)

Soil Association : Backswamp

Location : Numan

Lab Nº	Depth (cm)	Soil Separates Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH H2O (1:2.5)	KCl IN (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction C %	N %	C/N	O. M. %
6582		13	17	70	C	43	40	19	82	0.0	6.8	5.1	0.110				
6583		11	13	76	C	45	42	20	85	0.0	6.4	5.2	0.140				
6584		9	9	82	C	47	44	21	94	0.0	7.2	5.9	0.200				
6585		9	11	80	C	47	44	21	94	0.0	7.0	5.5	0.150				
6586		9	8	83	C	48	45	22	93	0.0	7.6	6.3	0.450				
6587		11	6	83	C	48	45	22	95	0.0	7.6	6.5	1.800				

Lab. Nº	Fe	Al	Exchangeable cations Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions SO_4	Cl	CO_3	HCO_3	Derived Values Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients CaO	MgO	K_2O	P
	← meq / 100g →									← meq / 100g →								← mg / 100 →			ppm
6582			30.4	40.7	3.5	0.3	74.9		88.4					85	0.6	4					
6583			31.9	42.0	5.4	0.3	79.6		95.2					84	0.9	6					
6584			31.3	41.2	4.1	0.3	76.9		90.6					85	0.7	5					
6585			31.3	43.2	9.3	0.2	84.0		88.4					95	1.5	11					
6586			30.7	40.7	6.4	0.2	78.0		64.6					100	1.1	10					
6587			29.4	44.4	11.3	0.2	85.3		88.4					96	1.9	13					

Soil Series : ....

Soil Pit Nº : L4 - 4(A,B,C,D,E,F)

Soil Association : Backswamp

Location : Numan

Lab Nº	Depth (cm)	Soil Separates: Sand %	Silt %	Clay %	Texture Class	Moist. Equiv. %	Water Content: 1/3 bar %	15 bar %	Saturation percentage	Hydraulic conductivity cm/hr	pH: H2O (1:2.5)	KCl 1N (1:2.5)	EC. X 10^3 mmhos/cm (1:2.5)	Organic Fraction: C %	N %	C/N	O. M. %
6588		13	16	71	C	43	40	19	85	0.0	6.3	4.8	0.150				
6589		13	12	75	C	44	41	20	86	0.0	6.4	5.1	0.340				
6590		9	8	83	C	48	45	22	96	0.0	6.6	5.7	1.000				
6591		7	10	83	C	48	45	22	90	0.0	7.7	6.5	0.380				
6592		11	10	79	C	46	43	21	90	0.0	7.8	6.5	0.440				
6593		9	8	83	C	48	45	22	81	0.0	7.5	6.3	0.440				

Lab. Nº	Fe	Al	Exchangeable cations: Ca	Mg	Na	K	Total Ext. Bases	Extract Acidity	C. E. C.	Anions: SO_4	Cl	CO_3	HCO_3	Derived Values: Percent Base Saturation	S.A.R.	E. S. P.	E.C.P.	Available Nutrients: CaO	MgO	K_2O	P
	meq / 100g									meq / 100g								mg / 100			ppm
6588			29.4	49.4	2.0	0.1	80.9		88.4					92	0.3	2					
6589			29.4	49.0	5.9	0.1	84.4		94.0					90	0.9	6					
6590			28.2	52.7	10.0	0.1	91.0		91.8					99	1.6	11					
6591			21.0	49.0	6.1	0.1	76.2		68.0					100	1.0	9					
6592			21.0	48.1	4.6	0.1	73.8		71.4					100	0.8	6					
6593			21.9	39.1	9.1	0.0	70.1		71.4					98	1.6	13					

APPENDIX III

GLOSSARY OF TERMS

Alkaline soil	A soil having a pH value above 7.3. Generally a soil that is alkaline throughout most or all of the parts of it occupied by plant roots.
Alluvial soil	Soils developing from transported and relatively recently deposited material (alluvium) with little or no modification of the original materials by soil-forming processes.
Base Saturation	The relative degree to which soils have metallic cations absorbed. The proportion of the cation-exchange capacity that is saturated with metallic cations.
Cation	An ion carrying a positive charge of electricity. The common soil cations are calcium, magnesium, sodium, potassium and hydrogen.
Cation-Exchange Capacity (C.E.C.)	A measure of the total amount of exchangeable cations that can be held by the soil. It is expressed in terms of milli-equivalents per 100 grams.
Clay	As a soil separate, the mineral soil particles less than 0.002 mm. in diameter. As a soil textural class, soil material that contains 40 percent or more of clay, less than 45 percent of sand and less than 40 percent of silt.
Clay loam	Soil material that contain 27 to 40 percent of clay and 20 to 45 percent of sand.
Concreations	Hard grains, pallets or nodules from concentration of compounds in the soil that cement soil grains together.
Conductivity, electrical	A physical quantity that measures the readiness with which a medium transmits electricity. Commonly used for expressing the salinity of irrigation waters and soil extracts because it can be directly related to salt concreation. It is expressed in (mmhos/cm) at 25° C.
Consistence	The combination of properties of soil material that determine its resistance to crushing and its ability to be molded or changed in shape. Consistence depends mainly on forces of attraction between soil particles. Consistence is described by such words as loose, friable, firm, soft, plastic and sticky, etc.

Drainage, soil	(1) The rapidity and extent of the removal of water from the soil by runoff and flow through the soil to under-ground spaces. (2) As a condition of the soil, it refers to the frequency and duration of periods when the soil is free of saturation.
Exchangeable sodium	Sodium that is attached to the surface of soil particles which can be exchanged with other positively charged ions in the soil solution, such as calcium and magnesium.
Field capacity	The amount of moisture remaining in a soil after the free water has been allowed to drain away into drier soil material beneath; usually expressed as a percentage of the ovendry weight of soil or other convenient unit. It is the highest amount of moisture that the soil will hold under conditions of free drainage after excess water has drained away following a rain or irrigation that has wet the whole soil.
Fine textured soil	Roughly, clayey soil containing 35 percent or more of clay.
Heavy soil	An old term formerly used for clayey or fine-textured soils. (The term originated from the heavy draught on the horses when plowing.)
Leaching	The removal of material in solution by the passage of water through soil.
Light soil	An old term formerly used for sandy or coarse-textured soils.
Mechanical analysis	The physical analysis of soil materials to determine the amounts of the various soil separates, or grain-size fractions.
Morphology, soil	The constitution of the soil including texture, structure, consistence, colour and other physical, chemical and biological properties of the various soil horizons that make up the soil profile.
Mottled	Soil horizons irregularly marked with spots of colour. A common cause mottling is imperfect or poor drainage.
Parent material	Unconsolidated mineral material or peat from which the soil profile develops.
Parts per million (P.P.M.)	A notation for indicating a small amount of material. The expression gives the number of units by weight of the substance per million weight units of ovendry soil.
Percolation	The downward movement of water through soil.
Permeability, soil	The quality of a soil horizon that enables water or air to move through it.

pH	A numerical designation of relatively weak acidity or alkalinity as in soils and in other biological systems. Technically pH is the common logarithm of the reciprocals of the hydrogen concentration of a solution. A pH of 7 indicates precise neutrality, higher values indicate increasing alkalinity and lower values increasing acidity.
Profile (soil)	A vertical section of the soil through all its horizons and extending into the parent material.
Reaction, soil	The degree of acidity or alkalinity of a soil mass, expressed in either pH value or in words.
Relief	Elevations or inequalities of the land surface, considered collectively.
Run-off	The surface flow of water from an area.
Saline soil	A soil containing enough soluble salts to impair its productivity for plants.
Sand	Individual rock or mineral fragments in soils having diameters ranging from 0.5 mm to 2.0 mm. The textural class name of any soil that contains 5 percent or more of sand and not more than 10 percent of clay.
Sandy clay	The textural class name of any soil containing 35 percent or more of clay and 45 percent or more of sand.
Sandy loam	Soils of this textural class contain less than 20 percent clay or more than 50 percent sand.
Series, soil	A group of soils that have soil horizons similar in their defferentiating characteristics and arrangement in the profile, except for surface texture, and are formed from a particular type of parent material.
Silt	(1) Individual mineral particles of soil that range in diameter between 0.05 mm to 0.002 mm. (2) Soil of the textural class silt contains 80 percent silt and less than 12 percent of clay.
Soil	A collection of natural bodies occupying parts of the earth's surface that support plants and that have properties due to the intergrated effects of climate and living matter acting upon parent material, as conditioned by relief over periods of time.
Soil survey	A general term for the systematic examination of soils in the field and in the laboratories, their description and classification, the mapping of kinds of soil, and the interpretation

	of soils according to their adaptability for various crops, grasses, and trees, their behaviour under use or treatment for plant production or for other purposes, and their productivity under different management systems.
Solum	The upper part of a soil profile, above the parent material in which the processes of soil formation are active.
Structures, soil	The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are platy, prismatic, columnar (prisms with rounded tops), blocky (angular or subangular), and granular. Structureless soils are (1) single grain - each grain by itself, as in dune sand, or (2) massive - the particles adhering together without any regular cleavage as in many claypans and hard pans. ("Good" or "bad" tilth are terms for the general structural condition of cultivated soils according to particular plants or sequences of plants.)
Substratum	A layer lying beneath the solum or true soil. It is applied to both parent materials and to other unconforming layers below the solum.
Surface soil	The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 15 to 20 cm.
Textural class or texture	Names given to soil material, and refers to the proportions of sand, silt and clay in a mass of soil on a percentage basis.
Topography	The shape of the ground surface, such as hills, mountains or plains.
Topsoil	A general term used in at least four different senses: (1) A presumed fertile soil or soil material, usually rich in organic matter, used to topdress roadbanks, lawns, and gardens; (2) the surface plow layer of a soil and thus a synonym for surface soil; (3) the original or present dark-colored upper soil which ranges from a mere fraction of an inch to 2 or 3 feet on different kinds of soil; and (4) the original or present A horizon, varying widely among different kinds of soil. Applied to soils in the field, the term has no precise meaning unless defined as to depth or productivity in relation to a specific kind of soil.
Type, soil	It is a sub-group of the soil series and is based on the texture of the surface soil.

Water retention	The physical property of soil that is based on surface force action and that makes it necessary to do work in order to remove water from soil pores and from soil surface.
Water table	The upper limit of the part of the soil or underlying rock material that is wholly saturated with water. In some places an upper or perched, water table may be separated from a lower one by a dry zone.
Water-holding capacity	The capacity (or ability) of soil to hold water; field capacity is the amount held against gravity or 1 atmosphere tension or pF 2.7.
Wilting point (or permanent	The moisture content of soil, or an overdry basis, at which plants (especially sunflower plants) wilt and fail to recover their turgidity when placed in a dark humid atmosphere.

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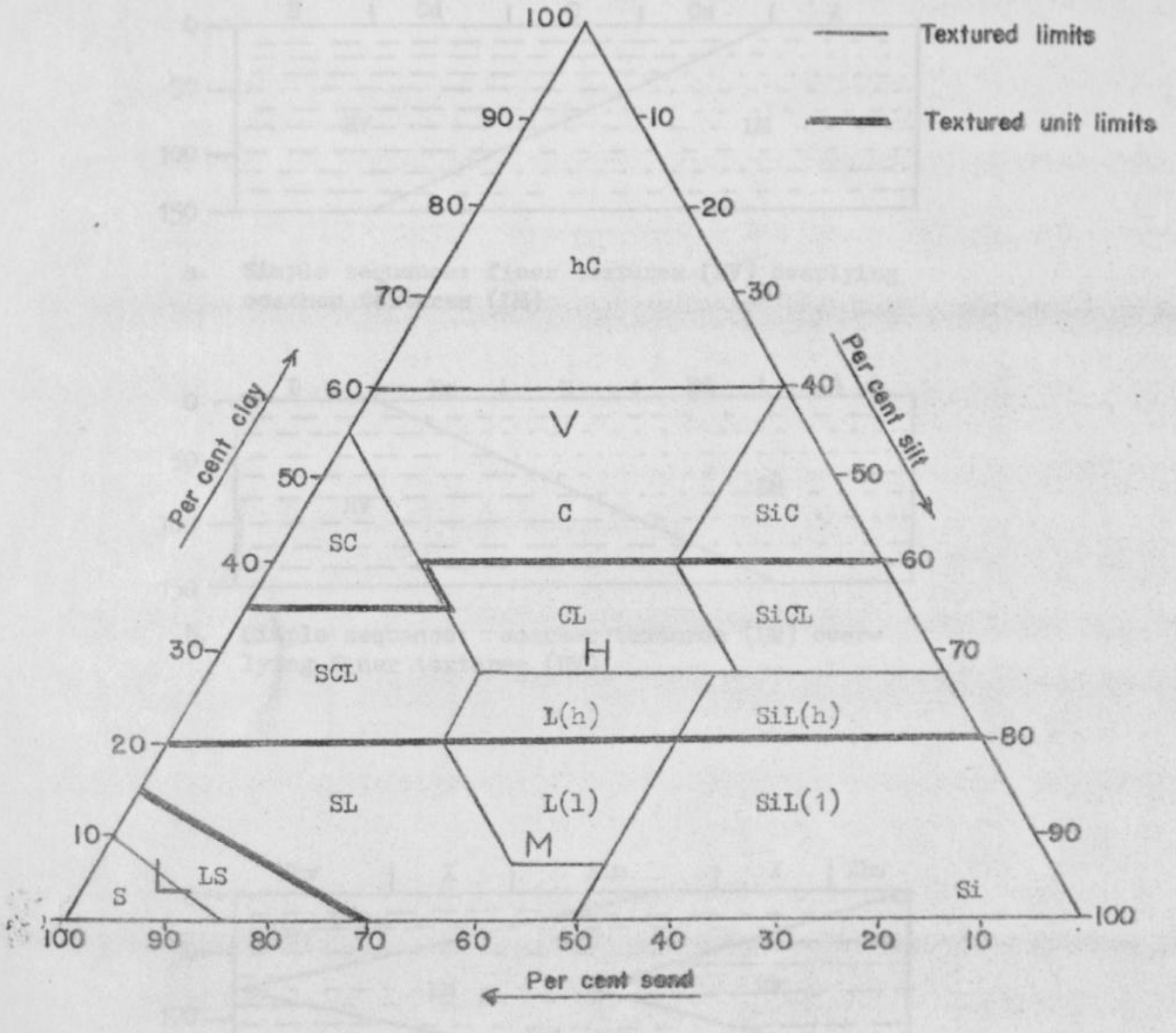
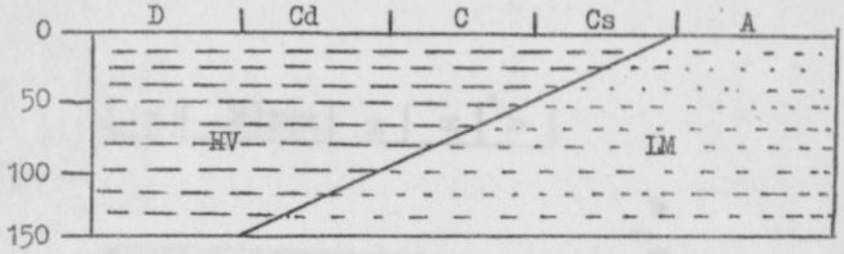


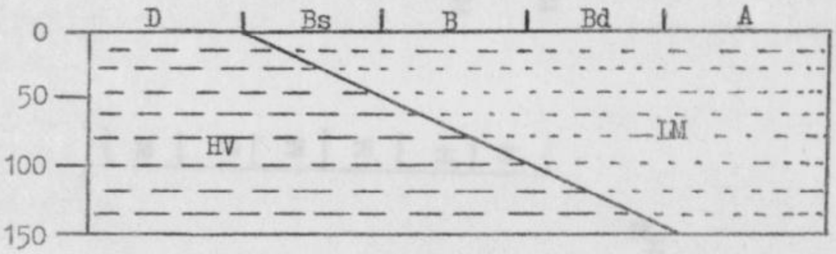
Figure 1 - Quantitative definition of four textural units: L, M, H, and V.

(Modified from D. A. Holmes and S. Western)

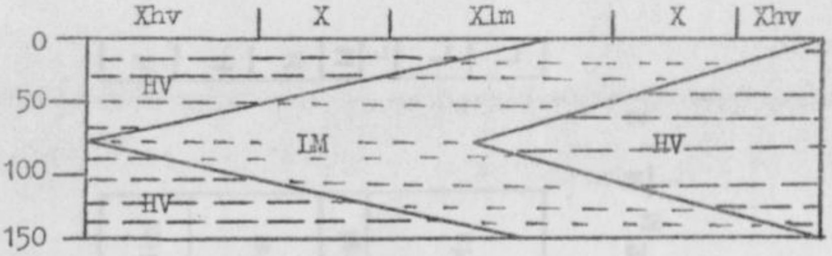
Textural Groups



a. Simple sequence: finer textures (HV) overlying coarser textures (LM)



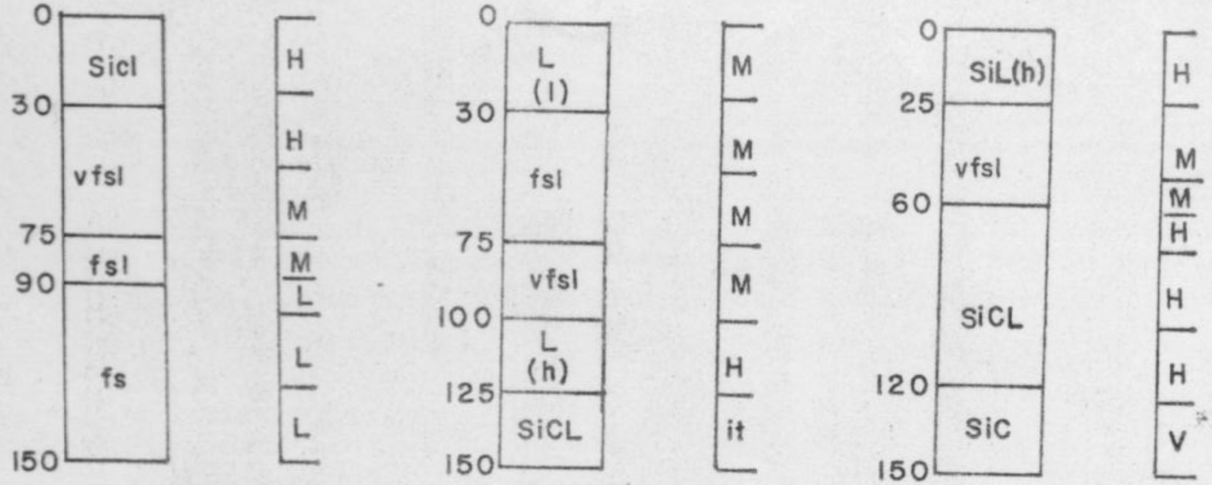
b. Simple sequence: coarser textures (LM) overlying finer textures (HV)



c. Complex sequence: coarser textures (LM) and finer textures (HV) interbedded.

Figure 3 - Diagrammatic illustration of the textural groups of the upper soil

(From D. A. Holmes and S. Western).



TEXTURAL PROFILE : $H^2 M \frac{M}{l} L^2$ $M^4 H^2$ $HM \frac{M}{H} H^2 V$

FIGURE 2 : Typical textural coding of the upper soil profile.